RUN

THE COMMODORE 64/128 USER'S GUIDE

September 1989
An IDGC/I Publication

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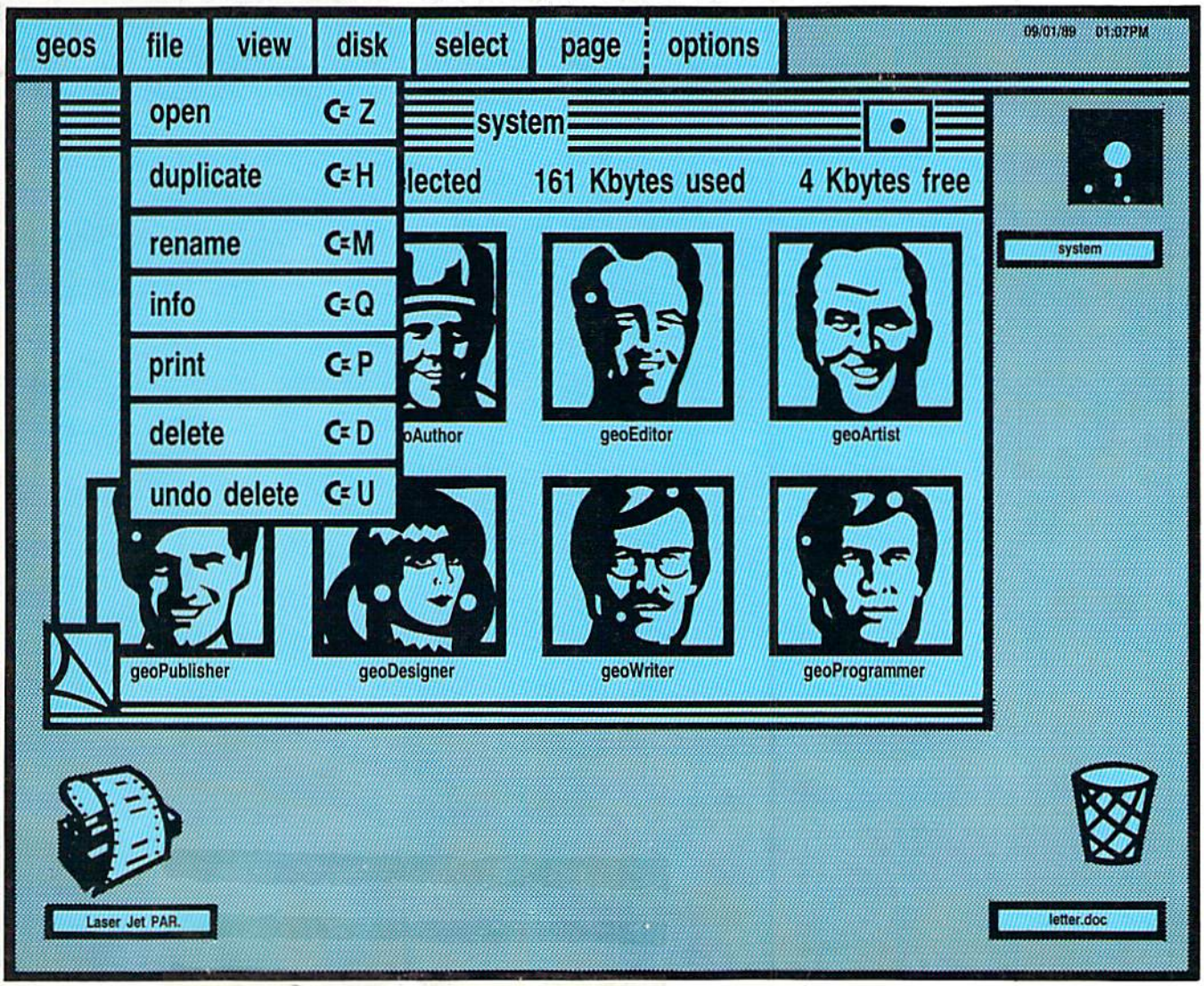

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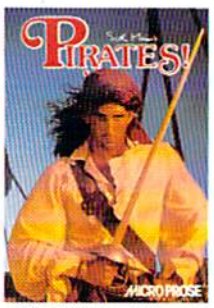

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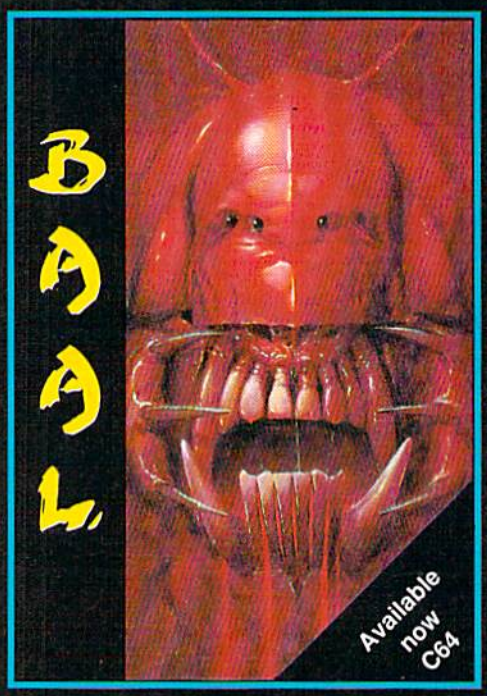

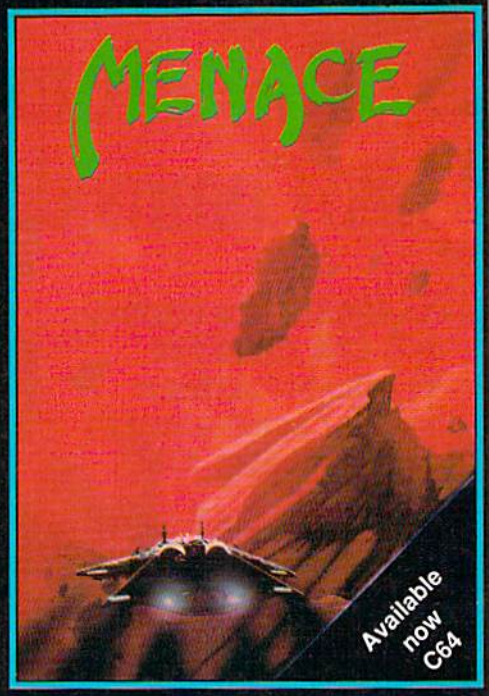

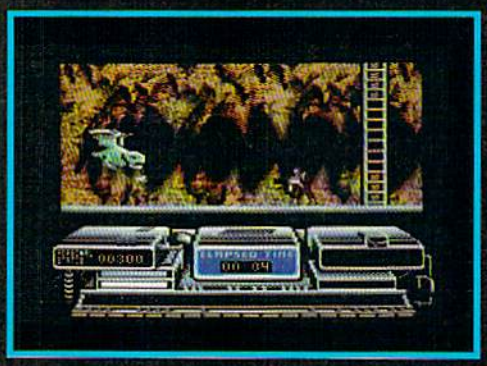

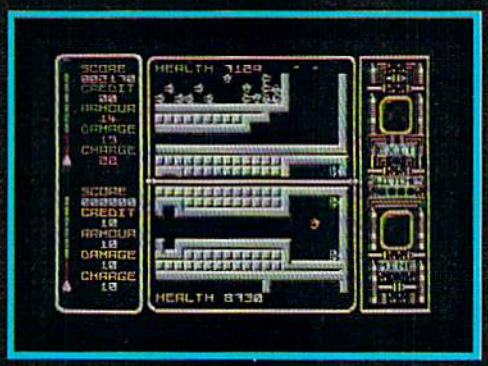

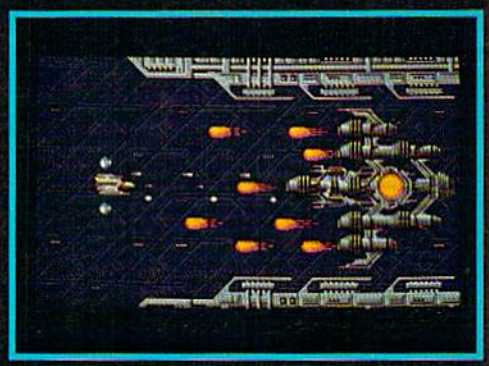

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Can you succeed? There is no option . . . the alternative is literally 'Hell on Earth'.

Screen Shots from the C64 Format

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CAPTAIN FIZZ
Meets The Blaster-Trons

The message is simple: co-operate or die!

It's double fun and double trouble all the way in Captain Fizz, the most exciting simultaneous two-player game you and a friend are ever likely to play. It's a whole new world of split-screen, high-speed action, as both of you take on the nasty Blaster-Trons infesting the planet Icarus.

Yup, it's a tough mission alright, but you might just win out with the right blend of co-operation, courage, laser-hot reflexes, tactical sense. . . and brains. The action is fast and furious in Captain Fizz, but if you can't work out the right tactics you'll both be dead meat.

There are 20 levels of savage and relentless action to battle through before you reach your objective, the central computer that's causing the evil infestation. You'll never get there, though, unless you put your heads together and co-operate; your buddy can't do it on his own, and neither can you. This is one program where even the easy games are hard. So remember — united you stand, but divided you fall. . .

Two joysticks required for two-player game

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MENACE

This is a pure arcade game – a fast action packed journey through six very different worlds where lightning fast reflexes and furious fire button action are your only hope of survival.

Your mission orders are simple, you must destroy the planet Draconia. In theory possible, in practice . . .

The planet Draconia, an unnatural planet, has been formed over many centuries by six of the most feared rulers that have ever existed. These rulers, exiled from their home galaxy, have ravaged and plundered space, using the worlds they have destroyed and the life forms they have created to build this planet of fear and death.

Now an end must be put to their reign of terror. A large scale attack will prove too costly to our space fleets, Draconia has many orbiting defence systems, the sacrifice may be in thousands of lives. A single fighter craft, approaching undetected, may have a chance to avenge those who have perished, by destroying Draconia. You have that chance . . .

Screen Shots are from the Amiga Format

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* If you find typing in these listings too frustrating, they are available on the September–October 1989 ReRUN disk for $16.47. To order, see page 57.

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RUNning Ruminations

It's easy to assess GEOS's place in the history of Commodore computing: When you think of productivity for the Commodore market, GEOS is the one word that comes to mind.

When GEOS was introduced a little over three years ago, it was heralded as a great new advance for the C-64 (a 128 version wasn't available until much later). *RUN* predicted that this new bit-mapped, disk-based operating system would "have a major long-term impact" on the current Commodore user community. GEOS promised C-64 owners ease of use and the capabilities of high-end systems such as the Apple Macintosh, Amiga and Atari ST. It introduced the majority of users to a world of icons, pull-down menus, dialogue boxes, windows and easy file handling using the mouse.

What would the Commodore environment look like without GEOS?

Has GEOS lived up to this advanced billing? You'd have to respond with a resounding yes, especially with the release of GEOS 2.0.

Initial response to GEOS was mixed. Some users experienced difficulty getting accustomed to the user interface or were bothered by the extensive copy-protection scheme. Others loved it!

Consider, for a moment, the Commodore eight-bit industry without GEOS. For years now, Berkeley Softworks has been the major producer of productivity software for the Commodore. Without GEOS, we would all be suffering from a severe overdose of games.

In hindsight, GEOS was the right program at the right time. A strong support industry rallied around GEOS. And, in turn, GEOS fostered the development of several peripherals, including the mouse, RAM expanders and the 1581 drive. The relationships Berkeley formed with Commodore and QuantumLink were also mutually beneficial.

But perhaps the single most important reason for GEOS's continued success is user acceptance and an active, supportive group of computerists.

In this issue we profile some of the key personalities in the GEOS community—a creative and talented collection of programmers, users, producers and artists.

We also interview Brian Dougherty, Berkeley chairman and CEO. While his company has turned its sights on the Apple and PC markets, Dougherty is quoted as promising to "continue to refine and improve" existing Commodore products. Good news for the Commodore community!

It would be an exaggeration to state that as GEOS goes, so goes the Commodore market. But the Commodore world would be a vastly different—and a lot less exciting—place without GEOS.

Dennis Brisson

Dennis Brisson
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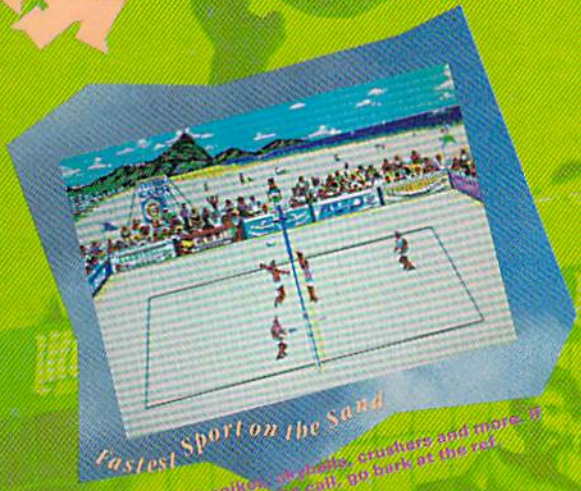

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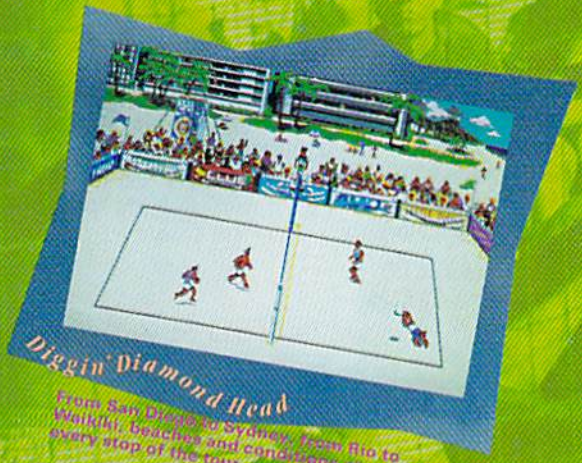

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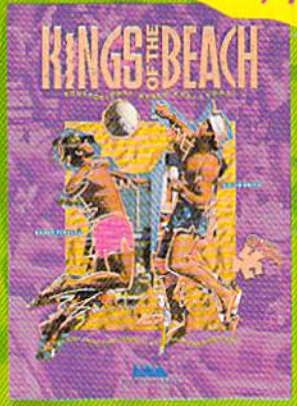

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MAGIC

Learn how to maintain and alphabetize disk directories and generally enhance your library of 1541, 1571 and 1581 disk utilities.

Compiled by TIM WALSH

$549 EMERGENCY SEQ & USR FILE VIEWER

Did you ever list a disk directory on your C-64, see a sequential or user file listed, yet couldn't load the contents of that file? Most program files, provided they're written in Basic, can be loaded and listed, but sequential and user files cannot.

To find the contents of a SEQ or USR file, append a ,S to sequential filenames and a ,U to user filenames, then load in 64 mode. The loading syntax is:

For sequential files: LOAD "FILE,S",8
For user files: LOAD "FILE,U",8

Once a file is loaded, press run-stop/restore and enter LIST. Although the first few characters will be corrupted, you should see enough data to learn the contents of a file. This trick usually saves you the trouble of loading and running the utility or application used to create the file.

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

$54A BASIC C-64 DIRECTORIES

Use the following routine in your own Basic 2.0 programs to read a disk's directory without corrupting a program currently residing in memory. The significance of this program over other directory utilities is that it creates arrays of the block data and filenames. Because this information is in arrays, you can organize it for use in your programs, arrange it in two columns, send it to the printer, and so on.

```
Ø REM C-64 DIRECTORY - ELAINE FOSTER
                                    :REM*237
1Ø REM STORES DIRECTORY DATA IN ARRAYS
                                    :REM*224
2Ø DIMF$(144):DIMB$(144):NU$=CHR$(Ø)
                                    :REM*182
3Ø OPEN3,8,Ø,"$Ø":POKE781,3:SYS65478:GETA$
   ,A$                              :REM*166
4Ø GETA$,A$:IFA$=""THEN8Ø           :REM*173
5Ø GETA$,B$:B$(N)=STR$(ASC(A$+NU$)+ASC(B$+
   NU$)*256)                        :REM*112
6Ø GETA$:IFA$=""THENPRINTB$(N)F$(N):N=N+1:
   GOTO4Ø                           :REM*238
7Ø F$(N)=F$(N)+A$:GOTO6Ø            :REM*215
8Ø CLOSE3:SYS65484:END              :REM*159
```

—ELAINE FOSTER, LAUNCESTON, TASM., AUSTRALIA

$54B HAWAII FIVE-O!

As a computer technician and dealer, I'd like to contribute the following Magic to *RUN* readers:

1. Surprisingly, while the Commodore 1571 disk drive is a good drive, it is not as durable as the 1541. Once it goes out of alignment, expect it to go out of alignment on a regular basis. To determine if your 1571 is going out of alignment, try a series of disk commands on a variety of disks. If the 1571 hesitates or makes a racket, chances are it is going out of alignment.
2. Furthermore, if a disk sticks in the 1571 drive, never force it, or you'll damage the upper read/write head. Another way to damage the drive is to initialize (OPEN 15,8,15,"I":CLOSE 15) without a disk in the drive.
3. If you daisy-chain a 1581 and an external 1571 to the C-128D, expect problems when powering up the computer if the external drives are not already on.
4. On the plus side, the upgraded 1571 in the C-128D is mechanically the same 1571 that Commodore has sold for four years, sans cover. I have interchanged the 1571 in the C-128 with a standard 1571 without a hitch.
5. Never use the Delete Records options in Pocket Filer 2, from Digital Solutions. Instead, use a disk editor or record deleter to prevent problems. Second, use your RAM expander to make backup disks, because it works faster and more efficiently than a disk drive. Finally, disable the restore key with a Poke command before using Pocket Filer, because accidentally pressing restore can crash the program. The Pokes for disabling the restore keys are:

C-64: POKE 792,193
C-128: POKE 792,125

—SCOTT SUMIDA, KAILUA, HI

$54C CLEAN DISK DRIVES

Readers have sent me a couple of Magic tricks on cleaning the 1541 and 1571 disk drives, but I cringe at the "advice" offered by these readers. To wit:

A few suggested inserting clean rags dipped in either alcohol or Freon into the drive. One imaginative reader even suggested saturating a cleaning disk with alcohol and running it in the disk drive for twenty seconds! You'll never catch me putting something that flammable and volatile into an electrical device. Furthermore, rags would tend to introduce more lint than probably already exists in the drive.

Never put rags, alcohol or other chemicals into your drive. If dust and dirt cause read/write problems, use a commercial cleaning disk, available at computer stores. If it doesn't clean to your satisfaction, take the drive to an authorized Commodore service center or let an experienced hardware-savvy friend take it apart and clean it for you.

—TIM WALSH, MAGIC COLUMNIST

$54D ALPHA ORDER 64/128

I recently developed Alpha Order 64/128 for alphabetizing files on a 1541-formatted disk. It's a tad longer than most ►

Things To Do, People To See, Places To Go.

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Magic tricks, but you'll find it an invaluable disk utility.

The program informs you as it proceeds through reading and alphabetizing entries, de-allocating unneeded directory blocks and writing the new directory list. Only when you're satisfied with the integrity of the alphabetized test disk should you use it on a valuable data disk.

```
Ø REM 1541 DISK ARRANGER 64/128 - SHAWN WI
  SCHOEFFER                          :REM*227
1Ø DIM TR(19),SE(19),TD$(255),DE$(144),SB$
   (144):CE=Ø:CS=1:TB=1:Z$=CHR$(Ø):X$=Z$
                                     :REM*2Ø9
2Ø FORI=1TO :X$=X$+X$:NEXTI:TR(1)=18:SE(1)
   =1:OPEN15,8,15:OPEN5,8,5,"#"      :REM*29
3Ø DO$="READING":PRINT#15,"U1:5"8,TR(CS),S
   E(CS):GOSUB21Ø                    :REM*17
4Ø FORI=ØTO255:GET#5,TD$(I):IFTD$(I)=""THE
   NTD$(I)=Z$                        :REM*227
5Ø NEXTI:TR(CS+1)=ASC(TD$(Ø)):SE(CS+1)=ASC
   (TD$(1))                          :REM*17
6Ø FORI=2TO226STEP32:IFTD$(I)=Z$THEN8Ø
                                     :REM*21
7Ø CE=CE+1:FORJ=ØTO29:DE$(CE)=DE$(CE)+TD$(
   I+J):NEXTJ                        :REM*191
8Ø NEXTI:CS=CS+1:IFSE(CS)<>255THEN3Ø
                                     :REM*7Ø
9Ø TE=CE:SB$(1)=DE$(1):PRINT"ALPHABETIZING
    ENTRY{CRSR DN}":IFTE=1THEN2ØØ :REM*2Ø6
1ØØ FORCE=2TOTE:FORCB=1TOTB:IFRIGHT$(DE$(C
    E),27)>RIGHT$(SB$(CB),27)THEN12Ø:REM*1
11Ø FORI=TBTOCBSTEP-1:SB$(I+1)=SB$(I):NEXT
    I:SB$(CB)=DE$(CE):GOTO13Ø        :REM*2Ø3
12Ø NEXTCB:SB$(TB+1)=DE$(CE)         :REM*252
13Ø TB=TB+1:PRINT"{CRSR UP}"CE"{CRSR LF}/"
    TE:NEXTCE:SR=CS-1:SW=INT((TE+7)/8):DO$
    ="DEALLOC"                       :REM*153
14Ø IFSR>SWTHENFORCS=SW+1TOSR:PRINT#15,"B-
    F:"Ø;TR(CS);SE(CS):GOSUB21Ø:NEXTCS
                                     :REM*157
15Ø TR(SW+1)=Ø:SE(SW+1)=255          :REM*1Ø7
16Ø DO$="WRITING":FORCS=1TOSW:PRINT#15,"B-
    P:"5,Ø:PRINT#5,X$;X$;            :REM*172
17Ø Y$=CHR$(TR(CS+1))+CHR$(SE(CS+1)):FORI=
    1TO8:CE=8*CS-8+I:IFI>1THENY$=Z$+Z$
                                     :REM*2Ø6
18Ø IFCE<=TETHENPRINT#5,Y$;SB$(CE);:NEXTI
                                     :REM*164
19Ø PRINT#15,"U2:5,"8,TR(CS),SE(CS):GOSUB2
    1Ø:NEXTCS                        :REM*246
2ØØ PRINT"END OF DIRECT ORDER":CLOSE5:CLOS
    E15:END                          :REM*79
21Ø INPUT#15,A,B$,C,D:IFA>ØTHENPRINT"DOS {
    CTRL 9}"B$;A"{CTRL Ø}BLOCK"C;D:GOTO2ØØ
                                     :REM*142
22Ø PRINTDO$" BLOCK"TR(CS)SE(CS):RETURN
                                     :REM*177
```

—Shawn Wischoeffer, Naperville, IL

$54E Which Disk Drive Is Which?

Did you ever wish for a routine that detects the type of disk drive your program was accessing? If so, this handy C-64 and C-128 routine, called Which Drive Is Which?, determines the type of drive assigned to each active device number. It distinguishes between a 1541, 1571 and 1581, and it should work fine with most 1541 and 1571 clones.

```
Ø REM WHICH DRIVE IS WHICH? - DON DROHMAN
                                     :REM*5Ø
1Ø INPUT"ENTER DRIVE TO CHECK";DE :REM*161
2Ø OPEN 15,DE,15:CLOSE15             :REM*8
3Ø IF ST<>Ø THEN PRINT"DEVICE NOT PRESENT"
   :END                              :REM*173
4Ø OPEN15,DE,15,"UI":INPUT#15,EN$,EM$,ET$,
   ES$:CLOSE15                       :REM*111
5Ø DN$=RIGHT$(EM$,4)                 :REM*134
6Ø PRINT"THIS IS A "DN$" DRIVE":GOTO 1Ø
                                     :REM*76
```

—Don Drohman, Bellingham, WA

$54F 1581 Boot Protector

1581 Boot Protector, when run on a 1581 disk drive, creates a short one-block partition over track one, sector zero, on a 1581-formatted disk. You can then run an autoboot maker on the disk to make the disk autoboot. After that, you may issue the Validate and Collect commands with relative impunity, since neither de-allocates that disk's otherwise fragile autoboot sector.

```
Ø REM 1581 C-128 AUTOBOOT PROTECTOR - JIM
  DERRY                              :REM*87
1Ø PRINT"PUT 1581 DISK INTO DRIVE. PRESS A
    KEY"                             :REM*76
2Ø GETA$:IFA$=""THEN2Ø               :REM*212
3Ø OPEN15,DE,15:PRINT#15,"/Ø:BOOT SECTOR,"
   +CHR$(1)+CHR$(Ø)+CHR$(1)+CHR$(Ø)+",C":C
   LOSE15                            :REM*133
4Ø PRINT"NOW RUN A C-128 AUTOBOOT MAKER. D
   ISK IS PROTECTED."                :REM*187
```

—Jim Derry, East Detroit, MI

$550 128 Un-Autoboot Maker

Making a disk "autoboot" on your C-128 is a handy feature, but what do you do when you no longer want the disk to autoboot? Rather than re-format the disk, use my 128 Un-Autoboot Maker. It erases the boot data in track 1, sector 0 so that autobooting no longer occurs on startup or after a reset, and it leaves any other files intact.

Incidentally, 128 Un-Autoboot Maker works on 1581-formatted disks, too. You'll find it effective on 3½-inch disks protected by Jim Derry's 1581 Boot Protector, above.

```
Ø REM UN-AUTOBOOT MAKER - LARRY PANKEY
                                     :REM*175
1Ø N$=CHR$(Ø):SCNCLR:PRINT"PLACE DISK TO U
   N-AUTOBOOT IN DRIVE"              :REM*66
2Ø PRINT"PRESS A KEY":GETKEYA$       :REM*1Ø6
3Ø DCLOSE:OPEN15,8,15,"IJ":IF DS THENPRINT
   DS$:CLOSE 15:END                  :REM*199
4Ø OPEN8,8,8,"#"                     :REM*147
5Ø PRINT#15,"U1";8;Ø;1;Ø             :REM*164
6Ø FOR A=Ø TO 24:GET#8,A$:B$=B$+CHR$(ASC(A
   $)):NEXT                          :REM*91
```

```
7Ø IF LEFT$(B$,3)="CBM"THEN BEGIN :REM*233
8Ø X=8:DO                          :REM*59
9Ø A$=MID$(B$,X,1):C$=C$+A$:X=X+1:LOOP UNT
   IL A$=N$                        :REM*1
1ØØ C$=LEFT$(C$,LEN(C$)-1):PRINT"BOOT FILE
    NAME IS:"C$                    :REM*32
11Ø BEND:ELSE PRINT "NOT AN AUTOBOOT DISK"
   :DCLOSE:END                     :REM*111
12Ø PRINT#15,"U1";8;Ø;1;Ø          :REM*226
13Ø PRINT#15,"B-P";8;Ø             :REM*2Ø3
14Ø FOR A=1TO255:PRINT#8,N$;:NEXT :REM*214
15Ø PRINT#15,"U2";8;Ø;1;Ø          :REM*62
16Ø PRINT#15,"B-F";Ø;1;Ø           :REM*124
17Ø DCLOSE:PRINT"ALL DONE":END     :REM*51
```

—Larry Pankey, Dana Point, CA

$551 Header Manipulator 64

Header Manipulator, a handy C-64 disk utility for making custom disks on the 1541 and 1571 disk drives, lets you perform the following three functions:

1. Hides the directory. Files can be read from the disk, but the filenames cannot be displayed.
2. Changes the disk so that LOAD"*",8,1 appears whenever you try to list the directory. You'll find this handy for disks requiring the user to load only the first file listed in the directory.
3. Changes the disk name. This can be used after option 1 or 2 above to render a directory readable again.

After loading and running the program, use a non-essential work disk to test the program. You'll enjoy making fancy disks with this utility.

```
Ø REM HEADER MANIPULATOR - ERICK CANTU PAZ
                                   :REM*94
1Ø POKE5328Ø,Ø:POKE53281,Ø:PRINT"{SHFT CLR
   }{CTRL 9}{CTRL 8}{11 SPACEs}HEADER MANI
   PULATOR{11 SPACEs}"             :REM*176
2Ø A$=CHR$(141)+"L{SHFT O}"+CHR$(34)+"*"+C
   HR$(34)+",8,1"+CHR$(145)+CHR$(145)
                                   :REM*22
3Ø A$=A$+CHR$(Ø)+CHR$(Ø)+CHR$(Ø)   :REM*195
4Ø OPEN7,8,15,"I":OPEN8,8,8,"#":OPEN1,Ø
                                   :REM*18Ø
5Ø PRINTTAB(45)"1) VANISH DIRECTORY"
                                   :REM*185
6Ø PRINTTAB(45)"2) CHANGE TO ";MID$(A$,2,9
   )                               :REM*157
7Ø PRINTTAB(45)"3) CHANGE NAME":GOSUB17Ø
                                   :REM*148
8Ø PRINTTAB(85)"MAKE A SELECTION : ";
                                   :REM*253
9Ø INPUT#1,O$:O=VAL(O$):ONOGOTO1ØØ,13Ø,11Ø
   :GOTO8Ø                         :REM*11Ø
1ØØ A$=CHR$(2Ø)+CHR$(2Ø)+CHR$(2Ø)+CHR$(Ø)+
    CHR$(Ø)+CHR$(Ø):GOTO13Ø        :REM*137
11Ø PRINTTAB(85)"NEW NAME :";:INPUT#1,A$:P
   RINT                            :REM*146
12Ø FORX=1TO16-LEN(A$):A$=A$+CHR$(16Ø):NEX
   T                               :REM*37
13Ø PRINT#7,"B-P:";8;144:PRINT#8,A$;
                                   :REM*196
14Ø PRINT#7,"B-W:";8;Ø;18;Ø        :REM*2
15Ø INPUT#7,E,E$,T,S:PRINTTAB(85)"DISK STA
    TUS :"E;E$;T;S                 :REM*92
16Ø CLOSE8:PRINT#7,"IØ":CLOSE7:END:REM*172
17Ø PRINT#7,"U1:";8;Ø;18;Ø:PRINTTAB(85)"{C
   TRL 9}";                        :REM*233
18Ø PRINT#7,"B-P:";8;144:FORH=1TO23:GET#8,
   D$:PRINTD$;:NEXT:PRINT:RETURN :REM*152
```

—Erick Cantu Paz, Mexico City, Mexico

$552 Print Speed 64

Controlling print speed to the screen is easy with Print Speed 64. After typing and running this short machine language program, enter POKE 2,X to control the print speed, where X ranges from 0 (fastest) to 255 (slowest). Incorporate this handy utility into your programs for attention-getting effects.

```
Ø REM PRINT SPEED - ERICK CANTU PAZ:REM*88
1Ø FORJ=ØTO35:READB:POKE828+J,B:NEXT
                                   :REM*85
2Ø SYS828                          :REM*154
3Ø DATA 169,3,141,39,3,169,71,141,38,3,96,
   72,138,72,152,72,166,2,24Ø,8,16Ø
                                   :REM*219
4Ø DATA Ø,136,2Ø8,253,2Ø2,2Ø8,25Ø,1Ø4,168,
   1Ø4,17Ø,1Ø4,76,2Ø2,241          :REM*1
```

—Erick Cantu Paz, Mexico City, Mexico

$553 Two 80-Column Screens

In both the 16K and 64K video RAM versions of the C-128, there's enough free memory to display two independent screens. My program, Two 80-Column Screens, consists of the minimal Basic code needed to make a second 80-column text screen.

The first line of code activates the second independent screen and places some text in it. The second line restores the original screen. Play around with the program and you'll find that an almost infinite number of possibilities exist for putting this routine to use in your own programs.

```
Ø REM TWO 8Ø-COLUMN SCREENS - PETER M. L.
  LOTTRUP                          :REM*38
1Ø SYSDEC("CDCC"),16,12:SYSDEC("CDCC"),Ø,1
   3:SYSDEC("CDCC"),24,2Ø:SYSDEC("CDCC"),Ø
   ,21:POKE 26Ø6,16:POKE 26Ø7,24:SCNCLR
                                   :REM*25
2Ø COLOR6,7:PRINT"THIS IS THE ALTERNATE 8Ø
   -COL. SCREEN": PRINT"PRESS A KEY TO RET
   URN TO DEFAULT SCREEN...":GETKEYA$
                                   :REM*4Ø
3Ø SYSDEC("CDCC"),Ø,12:SYSDEC("CDCC"),Ø,13
   :SYSDEC("CDCC"),8,2Ø:SYSDEC("CDCC"),Ø,2
   1:POKE 26Ø6,Ø:POKE 26Ø7,8:COLOR 6,1
                                   :REM*5
```

—Peter Lottrop, Buenos Aires, Argentina

$554 Professional Menus

Eliminate boring Basic menus by using my Professional Menu 64/128 to add the appeal of a mouse-based point-and- ►

click menu to even the simplest of your own programs. Best of all, no mysterious machine language or sprite drivers are used. In fact, you don't even need a mouse! Just use the cursor keys to move the pointer and the return key to make your selection.

```
Ø REM PROFESSIONAL MENU 64/128 - J.E. REUT
  ER                                  :REM*1Ø7
1Ø J=1:PRINTCHR$(147)                 :REM*36
2Ø PRINT"{SHFT CLR}{COMD A}{6 SHFT *s}{COM
   D R}{6 SHFT *s}{COMD R}{6 SHFT *s}{COMD
    R}{6 SHFT *s}{COMD R}{6 SHFT *s}{COMD
   S}"                                 :REM*14Ø
3Ø PRINT"{SHFT -}1.{4 SPACEs}{SHFT -}2.{4
   SPACEs}{SHFT -}3.{4 SPACEs}{SHFT -}4.{4
    SPACEs}{SHFT -}5.{4 SPACEs}{SHFT -}"
                                       :REM*151
4Ø PRINT"{COMD Z}{6 SHFT *s}{COMD E}{6 SHF
   T *s}{COMD E}{6 SHFT *s}{COMD E}{6 SHFT
    *s}{COMD E}{6 SHFT *s}{COMD X}":GOSUB1
   ØØ                                  :REM*91
5Ø GETA$:IF(A$<>"{CRSR RT}"ANDA$<>"{CRSR L
   F}"ANDA$<>CHR$(13))THEN5Ø           :REM*182
6Ø IFA$="{CRSR RT}"THENJ=J+1:IFJ=6THENJ=1
                                       :REM*223
7Ø IFA$="{CRSR LF}"THENJ=J-1:IFJ=ØTHENJ=5
                                       :REM*2Ø8
8Ø IFA$=CHR$(13)THEN14Ø:REM ON J GOTO/GOSU
   B GOES HERE                         :REM*25
9Ø GOSUB1ØØ:GOTO5Ø                     :REM*237
1ØØ PRINTCHR$(14):FORX=1TO5:IFJ=XTHENA$(X)
   ="{SHFT @}"                         :REM*48
11Ø IFJ<>XTHENA$(X)=" "                :REM*125
12Ø NEXT:P$="":FORX=1TO5:P$=P$+"{SHFT -}{5
    CRSR RTs}"+A$(X):NEXT              :REM*242
13Ø P$=P$+"{SHFT -}":PRINT"{HOME}{CRSR DN}
   "P$:RETURN                          :REM*74
14Ø PRINT"{4 CRSR DNs}{SHFT I}TEM"J"WAS SE
   LECTED.":FORX=1TO1ØØØ:NEXT:RUN      :REM*95
```

—Jerome E. Reuter, Moncks Corner, SC ■

Magic is a forum for RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.*

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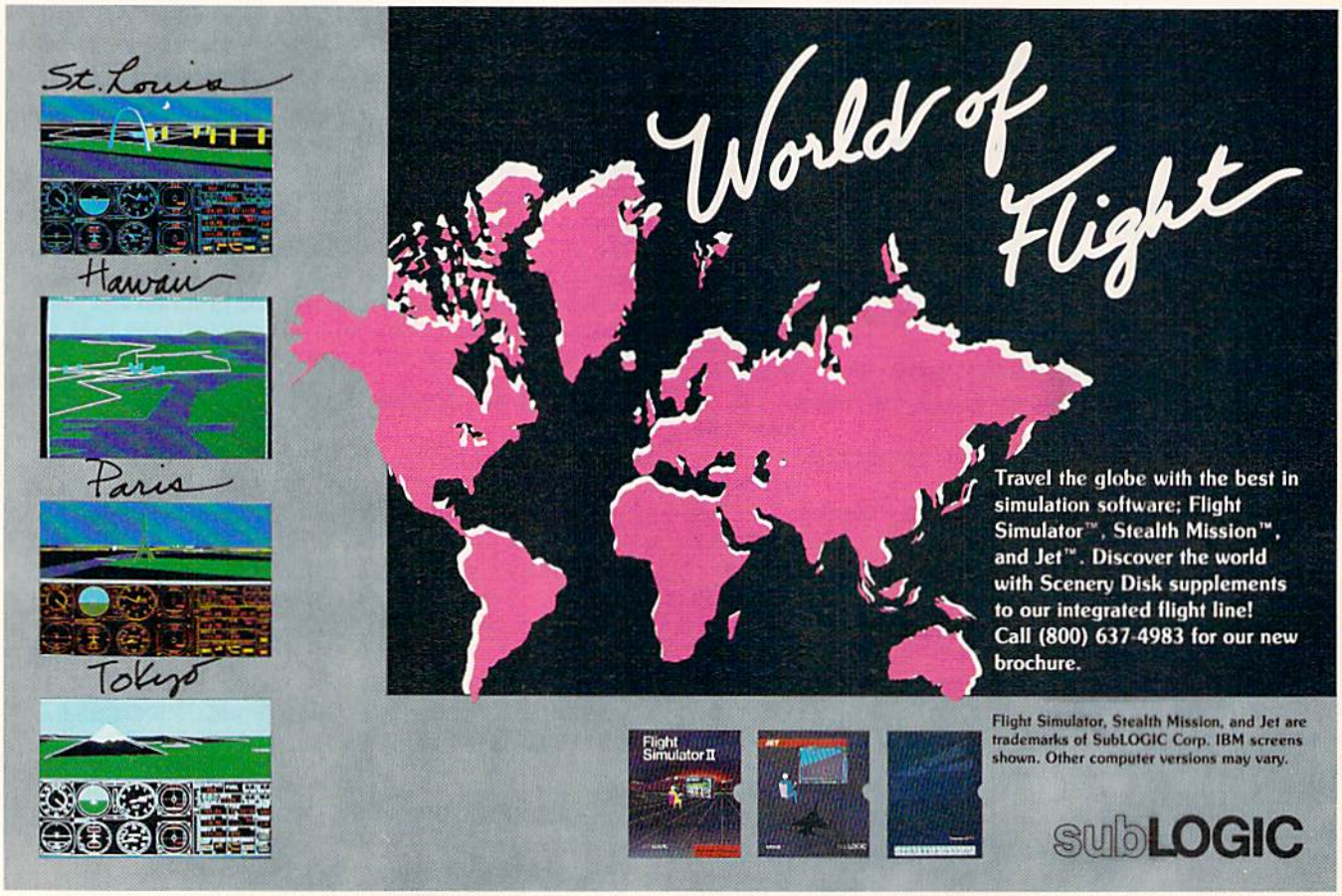
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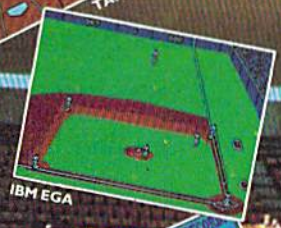
Orel Hershiser's STRIKE ZONE



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NEWS AND NEW PRODUCTS

More games and other goodies come out of the summer Consumer Electronics Show held in Chicago.

Compiled by HAROLD R. BJORNSEN

ALL IN A DAY'S WORK

SAN RAFAEL, CA—Broderbund Software (17 Paul Drive, San Rafael, CA 94903) will release **Licence to Kill**, based on the movie of the same name. In the game, you become agent 007, who fights on land, sea and in the air, striking out to bring down a drug lord. You'll pilot helicopters in pursuit of planes and jeeps, go swimming with sharks, dodge bullets, water-ski with a harpoon gun and chase oil tanks in a crop duster. It will be available in the fall for the C-64 for $29.95.

Released for the C-64 is **The Family Software Library**, consisting of three previously released programs, Bank Street Writer, a word processor for children and adults; Where in Europe is Carmen Sandiego?, a game of pursuit wherein players use facts about geography, history and culture to solve a mystery; and Type!, which teaches keyboarding and touch typing skills. $69.95.

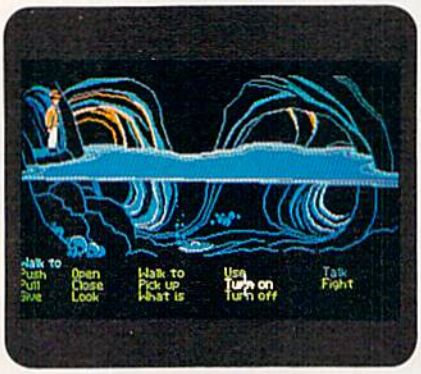
Check Reader Service number 400.

INDIANA JONES ET AL

SAN MATEO, CA—Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) is distributing Lucasfilm's **Indiana Jones and the Last Crusade** for $29.95. Indiana Jones must dodge searchlights, lightning bolts and falling rocks and make his way up the walls of a castle in searching for his father, who has been kidnapped by the Gestapo in the hope that he'll lead them to the Holy Grail. The game features movie theme music, sound effects, high-resolution graphics and off-disk copy protection in the form of a hieroglyph table in the *Byzantine Crusader* newspaper.

Also from Electronic Arts is **Starflight**, a fantasy role-playing game, with a galaxy of 270 star systems and 800 planets, over 1.9 million unique locations to be explored per planet and 1½ billion locations in all to be explored throughout the galaxy. For the C-64. Under $50.

Sentinel Worlds I: Future Magic, a science fiction role-playing mystery in which you must stop the savage destruction of valuable cargo transports by a mysterious raider ship. You're in command of a warship equipped with sophisticated combat systems and a skilled crew. For the C-64. Under $50.



Help Indiana Jones find his father and the Holy Grail.

Ferrari Formula One offers high-speed action on re-creations of 16 international racecourses. Players may choose to race on a favorite course or take on the strategic challenge of re-creating an entire Formula One season schedule. For the C-64. Under $50.

Check Reader Service number 405.

BETTER CHESS OR A BETTER LIFE

COSTA MESA, CA—Interplay (1575 Corporate Drive, Costa Mesa, CA 92626) has two new games for the C-64.

Battle Chess is an animated chess game where medieval figures combat each other upon contact for positioning on the field. It combines a chess logic system with graphics, animation and sound. Each piece has its own unique method of attacking its foe. A library of moves is included. $49.95.

Dragon Wars is set in the humid world of Oceana, covered by 85 percent water and dotted with islands. The most legendary realm is Dilmun, the fabled home of all that is great and good. Play begins as you and a party of pilgrims set out on a voyage for this holy land in search of a better life. $44.95.

Check Reader Service number 403.

BIKE RACE

SAN JOSE, CA—**The Cycles: International Grand Prix Racing** puts players on 15 of the most grueling motorcycle courses in the world. Players can race individual tracks or all 15 for the circuit championship. The C-64 racing game lets you race in three different performance classes—the 500cc, 250cc or 125cc—at five different skill levels. The higher the level, the more challenging the race and the more aggressive the competitors. It's available for $29.95 from Accolade, 550 South Winchester Blvd, Suite 200, San Jose, CA 95128.

Check Reader Service number 409.

ON TARGET

ANN ARBOR, MI—Advantage Ace (3542 Pheasant Run, Ct. #8, Ann Arbor, MI 48108) unveiled a new toy to be used with Commodore computer games. Called the **Strike Force Navigator**, it allows the user to navigate an on-screen vehicle anywhere throughout the theatre of action. In conjunction with a joystick, you center the Navigator on your vehicle's current position and read off your target's direction, then set the vehicle's heading to that direction and hit the target. $8.95.

Check Reader Service number 402.

FOUR NEW GAMES

SAN JOSE, CA—**Super Hang On**, a motorcycle race arcade game for the C-64, lets the player adjust the game's difficulty and challenge by selecting various courses, as well as build their own. Points are awarded for overall precision driving in distance, speed and course completion. $29.95.

A one-player game for the C-64, **Vigilante** goes in search of his girlfriend who has been abducted by a gang of

thugs. You're challenged to avenge the capture of the woman, and the streets are yours to rule. $24.95.

In **Heavy Barrel**, for the C-64, you must recapture an underground nuclear missile site control complex that has been occupied by terrorists before they launch the missiles. $29.95.

Batman, the Caped Crusader offers you the chance to foil The Penguin's plot to take over the world with an army of robot penguins. You must make your way through the streets of Gotham City and across rooftops to destroy The Penguin's master computer and rescue Robin from the evil Joker. For the C-64. $24.95. Data East USA, Inc., 470 Needles Drive, San Jose, CA 95112.

Check Reader Service number 404.

Crockett and Tubbs

MIAMI—In **Miami Vice**, an interactive arcade game, you join Crockett and Tubbs for a crime-fighting spree with eight levels of action. You'll take a Ferrari on a chase through the Art Deco district, race a speedboat to Stiltsville and search a waterfront warehouse for an illegal shipment from Quito. It's available for the C-64 for $29.95 from Intracorp, 14160 SW 139th Court, Miami, FL 33186.

Check Reader Service number 408.

And the Winners Are. . .

SAN DIEGO—The Software Publishers Association handed out its annual Excellence in Software Awards to several Commodore software packages and a regular *RUN* contributor in a ceremony May 24 at the historic Hotel del Coronado in San Diego. Comedian, magician, computer enthusiast and *Night Court* star Harry Anderson presided over the black-tie affair.

Tetris, a software game from Spectrum HoloByte, won Best Entertainment Program, Best Action/Strategy Program, Best Original Game Achievement and the special Critics' Choice award for Best Consumer Software. MicroProse's combat-flight simulator, **F-19 Stealth Fighter**, took the Best Simulation Program. **The Three Stooges**, from Cinemaware, was awarded Best Sound Achievement in a Non-Music Product. Publishing International's **Hometown, U.S.A.** grabbed Best Creativity for an Educational Product. Broderbund's **Where in Europe is Carmen Sandiego?** garnered the Best Social Studies/Science Program and Best Home Learning Program awards.

Lonnie Brown, a *RUN* contributor of reviews and articles, was selected as the top computer news reporter for 1988. He writes a column for *The Ledger*, a newspaper published in Lakeland, Florida. Congratulations, Lonnie!

In Space, in a Tank or in the Past

LONDONDERRY, NH—Origin (136-B Harvey Rd., Londonderry, NH 03053) introduces four new games for the C-64.

Space Rogue, a space-flight simulation, immerses the player in the exploration of a universe as a plot unfolds during the pursuit of a profitable career in space. Specific subobjectives change depending upon the player's career path, and the ultimate mission isn't revealed until late in the game. $49.95.

Knights of Legend takes the player on a journey through a medieval world of fantasy, with changeable weather, night-day sequences and their effects on character development. The game includes more than 100 quests, 40 weapons and 100 different creatures. $49.95.

Windwalker, a martial arts simulation surrounded by the culture, terrain, characters and social aspects of the third-century B.C., requires quick reflexes in addition to intense concentration for the combat sequences. $39.95.

As an engineer for the Organization of Strategic Intelligence, your mission in **Omega** is to design the future's ultimate military cybertank, which can be made with predesigned capsule routines for nonprogrammers or a full-featured command language for those with a programming background. $49.95.

Check Reader Service number 401.

Action, Action, Action

ADDISON, IL—Psygnosis (P.O. Box 483, Addision, IL 60101) has introduced three games for the C-64 at $29.95 each.

Baal, an action-strategy game, features eight-way scrolling through three domains containing multiple levels, over 250 screens and more than 100 monsters and traps. As the leader of the Time Warriors, you are faced with the task of saving Earth from the evil Baal and the War Machine.

In **Captain Fizz Meets the Blaster-Trons**, your mission is to destroy the Blaster-Trons who are over-running the planet Icarus. With Blaster-Trons abounding, laser fire ricocheting, keys to find, gates to unlock and armor to be collected, you and another player will have to work closely to succeed.

Ballistix, a ball game, is played on 130 different pitches, with splitters filling the screen with dozens of balls, tunnels to hide them from view, red arrows to increase their speed and magnets to take them out of control.

Check Reader Service number 411.

Combots

BALTIMORE—Avalon Hill Game Company (4517 Harford Rd., Baltimore, MD 21214) has released **Combots**, a game for the C-64. In 2020, aliens landed and launched a worldwide campaign of domination. Your mission is to construct Combots to stop the alien conquest. These are robots that are between 12 and 300 feet tall and have two or four arms. They are powered by atomic, catalytic, diesel or gasoline fuel, are manned by a pilot and carry seven passengers. They fire four rockets, nine bullets or a 99-kilowatt reflex gun and can go anywhere, jump high and swim deep. $24.95.

Check Reader Service number 410.

Find the Evil Force

VANCOUVER, B.C., CANADA—Taito Software (267 West Esplanade, Suite 206, North Vancouver, B.C., Canada V7M 1A5) offers **Arkanoid II, the Revenge of Doh**, an action game for the C-64. To destroy an evil force lurking in a mammoth alien spaceship, one or two players controlling a maneuverable spacecraft must attempt to penetrate and break down 67 energy barriers by deflecting multiple energy balls. $29.95.

Check Reader Service number 412.

New On-Line Service

PURCHASE, NY—Minitel Services (2900 Westchester Ave., Suite 101, Purchase, NY) has offered access to its service, the **Minitel Network**, to Commodore 64/128 users. Some of the services available are cultural classroom-type exchanges between students around the world, tutoring, homework support, children's encyclopedia and research guides, as well as interactive computer games. Services are offered without a sign-up or monthly minimum fee and without prime-time rate increases.

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SOFTWARE GALLERY

Send 'em back to school with soccer, golf, a TV take-off and word processing.

Compiled by BETH S. JALA

WORD WRITER 4 ..... A–

Productivity Software Hasn't Died

At long last—a word processor that lets users work with their printer's normal text, function and speed capabilities, as well as with many different font styles, without investing a fortune in a whole series of programs. I found Word Writer 4 to be as far above most other word processors as the computer is above the typewriter.

Timeworks has retained most of the features that made their Word Writer 3 so popular: compatibility with their other programs, the outliner, the 85,000-word spelling checker, the 60,000-word thesaurus, the on-screen calculator and the built-in mail merge.

Among the new features are eight built-in fonts that can be printed in point sizes ranging from nine to 72, continuous formatting and a word-wrap that adjusts the line length according to the font selected. Also, not only can you import text from other word processors, including GEOS, but you can export as well. Timeworks has even included a user-definable macro that can hold up to 100 keystrokes. Bookmarks, another new element, are non-printable symbols you can place anywhere in your document to help you locate certain text or move quickly through a very long piece.

WW4 is not copy protected. The manual even instructs you to make a back-up version so you don't have to use, and possibly ruin, the original. The manual also takes the user step by step through the installation of the program and the initial hardware setup. One chapter shows you how to create a sample document and covers the widely used, most frequently needed functions of WW4. Another chapter is an alphabetical listing and description of every command and function available. You'll have no trouble using this well-designed documentation.

Although it doesn't support the 1764 RAM expansion unit, WW4 does support the 1581 disk drive to the extent that it can be used to hold the main program, the spelling checker, all the fonts and several documents. (If you choose to put the spelling checker on your 1581 disk, however, you can't use the thesaurus because the program assumes it's in the same drive that you are using for the spelling checker. I found this to be only a slight inconvenience.) Since the entire program, including the outliner, is loaded into the computer at one time, you can put the thesaurus into your 1541 or 1571 disk drive; WW4 also supports dual drives. You can send any legal disk command directly to the disk drive without leaving WW4, and you can view the directory at any time without disturbing your current document.

In addition, WW4 can import GEOS fonts. A converter program is used to change the GEOS fonts into the more dense dot pattern of WW4's fonts. If this conversion isn't used, the characters print out tall and skinny. Timeworks didn't include a font editor, but if you have one that works with GEOS fonts, you can do your editing in GEOS and then convert the fonts for use with WW4. Every font can be printed in Enlarged mode.

As good as this word processor is, I'm disappointed with what it can't do. For example, even though it does allow for headers and footers containing up to three groups of text (left, center, right), they're limited to only one line each. That means that everything you want in your header or footer must be placed on one line.

Another drawback is the lack of any way to force a new page, short of adding a number of blank lines. What this means is that if you don't want a particular paragraph to be divided between pages, you have to add blank lines between it and the previous paragraph until it's pushed to the new page. This plays havoc with your printouts when you go to move, add or delete text.

However, complete and easy to use in every other way, I don't see how you can go wrong investing in Word Writer 4 if you are in the market for a truly outstanding word processor that lets you work with different fonts. *(Timeworks, Inc., 444 Lake Cook Rd., Deerfield, IL 60015. C-64/$39.95.)*

—DOUGLAS BAYLES
HARVEY, LA

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

KEITH VAN ERON'S PRO SOCCER ..... B+

"Let's Go to the Videotape to See That Pele-Style Kick Again!"

One of the first programs I bought after getting my C-64 was International Soccer. Five years and several soccer games later, the object is still to kick the ball into the other team's net, but Keith Van Eron's Pro Soccer gives you a lot more to think about than simply color- ►

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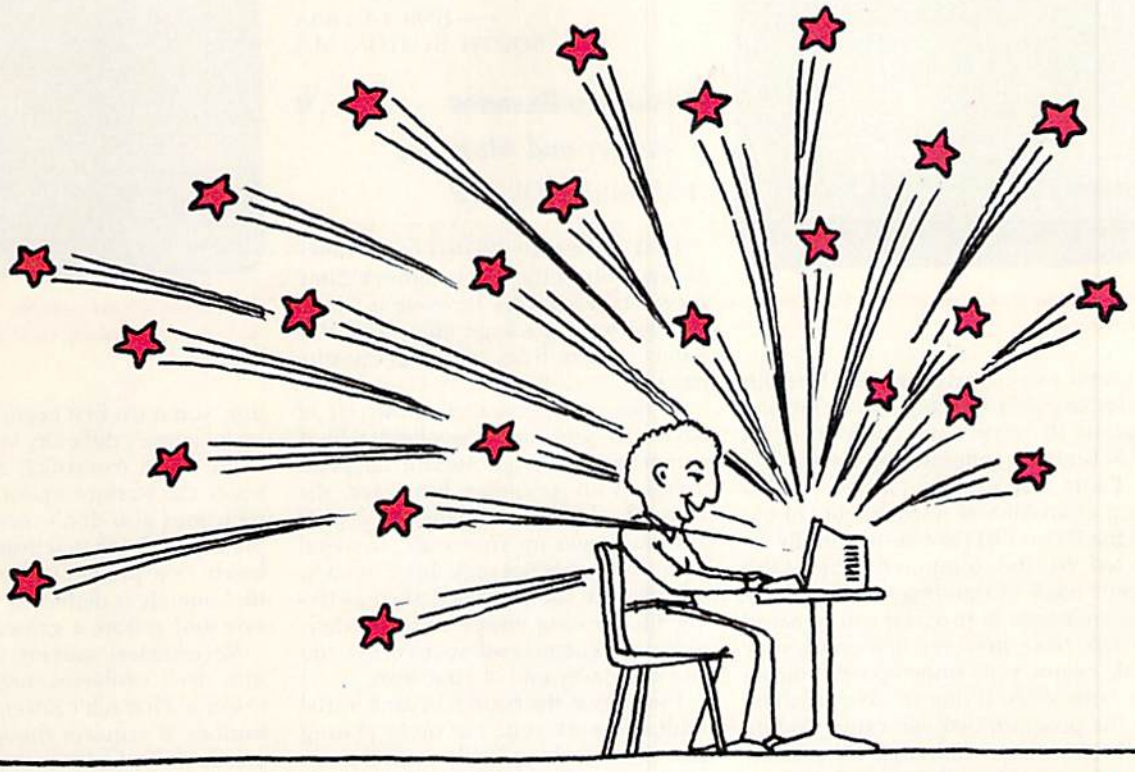

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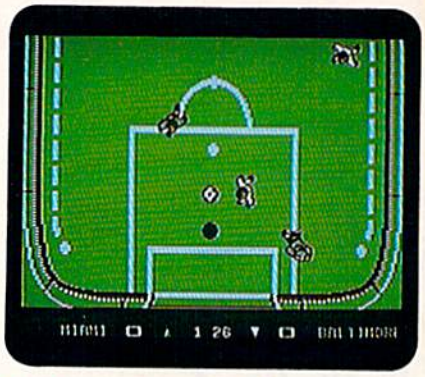
coordinating your players' uniforms.

Pro Soccer offers both an outdoor and an indoor version of the game, each with its own field, rules and playing style. You can go head to head against



Fancy footwork abounds in Keith Van Eron's Pro Soccer.

a friend, or you can choose the Medalist International Challenge, which pits you against 16 World Cup (outdoor) or six U.S. (indoor) computer opponents.

Those teams taking part in a World Cup or an All-Star tournament (24 out of the 29 on disk) are automatically selected by the computer, which also keeps track of standings and statistics. Tournaments in progress can be saved to disk. Note, however, that even if your disk comes with unprotected notches on both sides, trying to save anything to the program disk can cause loading difficulties later. Although the instructions state that all saves should be made to a separate disk, the program doesn't check to make sure that the program disk has been removed from the drive.

All the action is displayed from directly overhead. Normally, the player on your team who is closest to the ball is automatically under joystick control, but if you choose the Manual selection mode, you pick the controlling player by pressing the firebutton. You can also control the strength of your shots and passes by varying the length of time you hold down the firebutton. In addition, the position of the joystick when you shoot determines whether it will be a chip, volley, scissor or banana shot.

A master control panel lets you toggle between the Automatic and Manual selection modes, turn weather on and off (when weather is on, outdoor matches are sometimes played under rainy conditions), and select the length of your matches. My favorite option, however, lets you watch a replay after each goal is scored. Instead of simply showing the goal again, the screen actually appears to show a videotape momentarily switching to black and white and rapidly rewinding—scan lines included—to find a good starting point for the replay. Now, if I could only figure out how to get the program to replay my goals and not those of my opponents. . .*(Medalist International, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/$34.95.)*

—BOB GUERRA
SOUTH BOSTON, MA

PHARAOH'S REVENGE ..... B

Treasures and Mummies And Vaults; Oh My!

Back in the early 1980s, Lode Runner became one of the first computer game megahits. Pharaoh's Revenge is a similar software package that, unfortunately, suffers from some aggravating flaws.

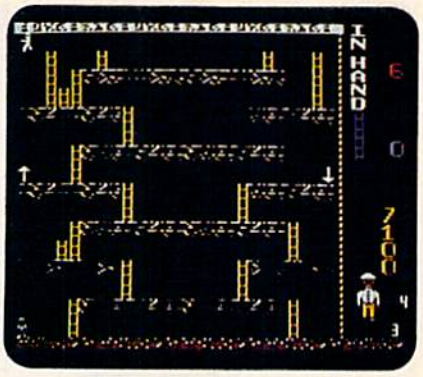
In this game, you assume the role of a treasure-seeking archaeologist who is rummaging through ancient Egyptian tombs. Your presence has irked the Pharaoh, and he has sent his guards and mummies on your trail. To avoid them, you must not only move quickly, but also use sound tactics, such as frequently creating escape routes. Otherwise, your enemies will soon corner you and take away one of your lives.

You start at the bottom of each burial vault and work your way up by placing and then climbing ladders. At the top of each screen lies your main objective—shimmering golden ankhs, which hold both points and extra lives.

There are four difficulty levels, which vary according to your enemies' speed, the number of ladders that can be used and whether or not all your ladders are available at one time. The most difficult level challenges you with 250 different tombs, 50 more than the other three possess.

The program is packed with options. For example, it can be played with either a joystick or the keyboard, and there are user-selectable speeds, which can make avoiding the Pharaoh's henchmen easier. The program also includes a user-friendly Construction mode, which you can use after making a backup of the non-copy protected disk. There are even cheat keys that provide extra lives or transport you to higher screens.

However, the game does have some problems. For instance, there are a few spots where, for no apparent reason, the archaeologist can't set up a ladder. A more serious difficulty is incomplete instructions. The manual, for example, doesn't clearly indicate that four games (one for each difficulty level) can be saved at one time and that to retrieve



The ladders will take you up, but watch out for the mummy coming down in Pharaoh's Revenge.

one, you must first begin playing at the saved game's difficulty level, exit to the main menu (control/2) and only then select the Restore option. And the instructions also don't mention the 500-point penalty that activating an escape hatch to a previous screen inflicts, or that one life is deducted whenever you save and restore a game.

Nevertheless, gamers who can cope with these problems might find much to like in Pharaoh's Revenge. Like Lode Runner, it requires thought as well as arcade skills. And to many players, such a mixture can be the recipe for a very satisfying gaming experience. *(Publishing International, 222 West El Camino Real, Suite 222, Sunnyvale, CA 94087. C-64/$29.95.)*

—WALT LATOCHA
OAK PARK, IL

TIME AND MAGIK ..... B–

Deductive Reasoning And Three for the Price of One!

Time and Magik is actually a package containing three different adventures on one disk—Lords of Time, Red Moon and The Price of Magik. Each can be played as a text-only game or with graphics. If you opt for pictures, the top two-thirds of the screen displays an illustration, while the bottom lists eight lines of text.

Although some of the pictures are nicely drawn, there are many more locations in the three adventures than there are pictures to illustrate them.

Consequently, the graphics rarely represent the scene described in the text. In addition, many of the graphics are used more than once within a single adventure to represent different locations and, in fact, all three adventures share illustrations.

1
When a wave of change sweeps across History, triggered by the Timelords' meddling, only one person is unaffected. You are sitting in the comfort of your own home, debugging your latest program, when suddenly
(Shift)

Graphics and text give you the setting in Time and Magik.

Despite this, the three are interesting and enjoyable. In Lords of Time, the object is to travel to nine time zones and retrieve nine different ingredients, ranging from a dinosaur egg to a silicon chip. You might also find 18 treasures and other objects that are needed to solve puzzles. One unique aspect of this adventure is that things that you find in one time zone might be used to solve puzzles in another. Points are awarded to you for everything collected, which makes Lords of Time similar to a big scavenger hunt.

Red Moon combines elements of traditional text adventures and fantasy role-playing games in a search to recover a stolen crystal. Once again, you must gather point-filled treasures, but this time you also have to worry about your health. If you enjoy combat, spells, logic puzzles and mazes, you'll probably like Red Moon.

The Price of Magik takes place after the crystal is recovered and stolen again by a magician named Myglar. To get it back, you have to enter the old house where Myglar is hidden. Now it's your mental health you must be concerned with. You begin at 20 years of age and feeling perfectly sane. Each time you're scared or injured, however, your sanity is shaken and you feel a few years older. (I guess the object here is to defeat Myglar and find the crystal before you're ready for the asylum or the old age home!)

Although Time and Magik doesn't feature a particularly sophisticated parser, all three adventures respond to several useful commands. My favorite is RAM Save, which lets you save your current position in computer memory rather than onto a disk. RAM Restore brings you back to your previous position and status. Typing Undo resurrects you by reversing the effects of your last several commands.

Time and Magik comes with a manual and a clue book containing hints for all three adventures. The book alphabetically lists objects, creatures, people and locations, which are coded to numbered clues listed elsewhere. By looking up the item or location that has you stumped and reading the corresponding clue, you can discover what to do at almost any juncture. *(Datasoft; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/ $29.95.)*

—BOB GUERRA
SOUTH BOSTON, MA

THE HONEYMOONERS C

"Humina. . .Humina!"
"Right in the Kisser!"
Look Who's Back!

"Hey, Norton! Look here! You and me, Trixie and Alice are on computer monitors—just like we were on television screens decades ago!"

"Hey, Ralphie boy! You're right! Wait 'til the boys down at the Raccoon Lodge hear about this!"

The Honeymooners, one of television's most popular shows from 1952 until it got the axe nearly 20 years later, serves as the basis for this double-sided disk program.

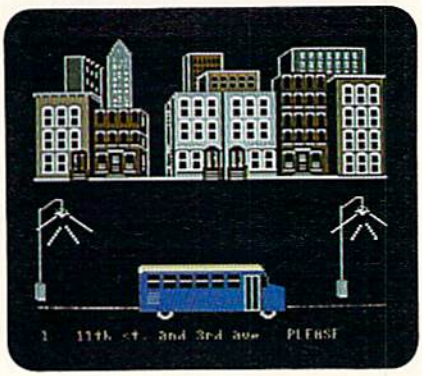
The game can be played with one to four players. Your goal is to earn sufficient money to get Ralph and Ed out of the New York bus and sewer systems so they can attend the annual Raccoon Lodge convention in Miami.

True Honeymooner fanatics will appreciate the Kramdens and the Nortons making the transition to computers. True computer gamers, however, are likely to find the graphics and game play ho-hum.

There's plenty to keep the Honeymooner fan interested: He or she can drive a New York City bus, just like Ralph, picking up and letting off passengers for money. With the player driving, however, the bus takes no preset route and holds to no time schedule; instead, it runs more like a taxicab.

A second money-making segment has Norton plugging leaks in the sewer, while trying to find his way back to the manhole cover. The wind blew away his map; you and Norton only caught a glimpse of it before going down under.

The final way to obtain money is to assemble a 20-piece puzzle before time runs out.



Help Ralph out on his bus route in The Honeymooners.

And, as an extra bonus for Honeymooner fans, test your Kramden-Norton trivia IQ on "The $99,000 Answer" show. With proper responses, Ralph and Ed can earn some fast bucks. Answer incorrectly, and, as Ralph would say, "To the moon!"

Honeymooner fans will appreciate the opening screen—Ralph's face is in the rising moon. The words to the show's theme are displayed at the bottom of the screen while the song plays. And, the program comes packaged with all sorts of order forms for Honeymooner newsletters, coffee mugs, books and photos from R.A.L.P.H. (Royal Association for the Longevity and Preservation of The Honeymooners).

A lot of emphasis has been placed on interesting the fans from television days, but the computer gamer may not get caught up in it. Ralph's bus game is graphically simplistic; Norton's trip through the sewer is equally so; and the bonus questions on "The $99,000 Answer" must, unless the player has seen many episodes in the past, be answered by guessing. Not even reading the manual (which covers nearly 20 pages of mostly Honeymooner history) is of much help.

The program is not without its better points, among which are the opening screen, some joking interludes and an attempt to keep the Honeymooners' theme going throughout the game.

You don't need to be intimately familiar with the original Honeymooners to play the games in the computer version, but being a true Honeymooner ►

devotee would greatly increase your enjoyment, not to mention your chances of answering the game-show questions. *(First Row Software, 3624 Market St., Philadelphia, PA 19104-2611. C-64/$29.95.)*

—LONNIE BROWN
LAKELAND, FL

WILLOW ..... D

Not a Box Office Hit
On Either Screen

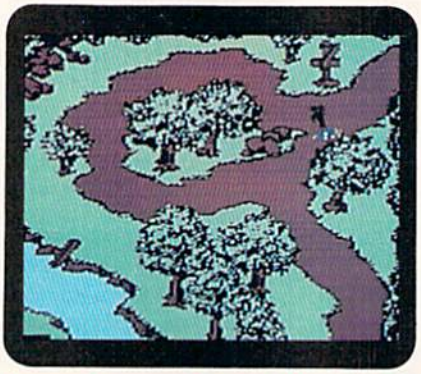
The film version of Willow was a critical and box office disappointment. A major marketing campaign aimed at filling American homes with Willow-related products also faltered. Arriving at the tail end of this merchandising mishap is Mindscape's Willow, a computer game that will probably do nothing to reverse the downhill trend.

Portraying a variety of heroes, including the title character, you are responsible for keeping a very special infant out of the clutches of the evil Queen Bavmorda. To do so, you must complete a series of mini-adventures before your final confrontation with the vile monarch.

After escaping with the baby through a maze-like dungeon, you race across the woods, pursued by Bavmorda's soldiers and killer dogs. Then you must choose which of two cages houses the hero warrior, Madmartigan. In the spellcasting segments, you transform a good sorceress from her animal shape back to her original human form. This requires selecting three runic characters from a row of 13 and combining them in the proper order on three different occasions. Then it's on to the ice caves to navigate your way through a perplexing maze, while riding atop a speeding shield. Next, after dodging flying axes and spears, you confront Bavmorda's henchman, General Kael, in a swordfight to the death—which will most likely be yours. In the final screen, Bavmorda challenges you to a test of magic.

If much of this sounds exciting, then perhaps I've overplayed my hand. The only segment entertaining and challenging enough to merit attention is the swordfighting screen. Otherwise, trial and error and mediocre reflexes will get most players through the remaining run-of-the-mill adventures. Why it took two double-sided disks to store these simple encounters defies explanation.

What truly sets Willow apart from many new C-64 games is not so much its shoddy programming or lack of inspiration as it is the wait time (up to over five minutes) required to load in each part of the adventure. To make matters worse, after you lose a life, the program requires almost a complete reload (an average of three minutes) in order to try the screen again. Even with a fast-load cartridge, you should keep a good book handy.



You are being pursued through the woods of Willow.

Somewhat relieving the agony is a Practice mode that lets you play all but the final screen as many times as you wish without extensive reloading. Another plus are the graphics, which, while not breathtaking, are nevertheless colorful and attractive. Also, after completion of the full adventure, the player can reset the game, randomizing the screens and scrambling the various spells. This feature makes repeated play possible.

Despite these pluses, the lengthy waiting time coupled with the unsatisfying game play are more than enough reason to chop Willow down. *(Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$29.95.)*

—LEN POGGIALI
SYRACUSE, NY

NAVY SEAL ..... B+

Have you got what it takes to become a Seal? I'm referring to a member of the U.S. Navy's elite sea, air and land commando team. This action/arcade game puts you through training and assignment paces that only the fittest and luckiest survive.

Basic training revolves around marksmanship, land and underwater obstacle courses, climbing and rappelling. Ratings in each area determine how well you perform in the game.

Navy Seal has four basic scenarios, each made up of operations like insertion, infiltration, targeting and extraction. Weapons at your disposal include a silencer-equipped pistol, submachine gun, concussion grenades, spear gun and diver's knife.

The game's graphics are smooth and very effective, especially during underwater scenes. A technique called parallax scrolling gives the game a three-dimensional feel.

My only real criticism is the inordinate amount of time a diver must spend underwater before reaching an objective. You're constantly under attack from sharks and enemy divers, and the longer you stay submerged, the odds against you mount.

I also found a bug during the cliff climbing section of basic training. My sprite character got stuck against the far right side of the screen and would only move a few paces left or right. Since you must use the cracks in the cliff to climb (and there were none where I was stuck), I could not complete the scenario and had to reboot.

These criticisms aside, Navy Seal is an enjoyable journey into the hard-boiled world of covert operations! *(Cosmi, 431 N. Figueroa St., Wilmington, CA 90744. C-64/$29.95.)*

—JOHN RYAN

DEMON'S WINTER ..... B+

Demon's Winter is the sequel to SSI's Shard of Spring. You must explore the world of Ymros in search of spells that will help you defeat the evil demon-god, Malifon, who has cast a spell that turned the oceans to blood and put the world into a deep freeze.

Before you can begin your adventure, you must create five characters. Once you've settled on their races (Human, Elf, Dark Elf, Dwarf or Troll) and traits (speed, strength, intellect, endurance and skill), you then select their classes. Classes range from fighters, like Rangers and Barbarians, to spiritualist Monks and Clerics, to spell-casting Wizards and Sorcerers, to Thieves and Scholars. Carefully decide on a race/class combination where particular skills will enhance your quest's completion.

Although Demon's Winter is similar, in many ways, to most other fantasy role-playing games, it seems to be more forgiving to inexperienced characters. There are plenty of weak enemies like rats, spiders and kobolds lurking in the countryside. The town guilds, where your characters can advance in level, are easy to find, and the first few promotions can be achieved with relatively little in

the way of experience points. Prices for simple weapons and armor are reasonable, and inexperienced magic users on a limited spell-point budget can actually use magic effectively.

In addition, if you've been frustrated with other role-playing games because all the characters you create seem wimpy compared to the thugs you face in combat, then Demon's Winter might be the FRP you've been waiting for. *(Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 99404. C-64/$29.95.)*

—BOB GUERRA

HOLE-IN-ONE MINIATURE GOLF C

The game that Hole-in-One Miniature Golf simulates is part sport and part fantasy—two elements that a computer can do wonders with. Unfortunately, DigiTek has produced a new version of the family pastime that probably won't enjoy the same popularity as its inspiration.

The software only has two courses—the C-64 version is shrink-wrapped with a sticker to this effect. (Warning to mail-order purchasers: some of DigiTek's ads don't reflect this point.)

Although the game's control system is extremely user-friendly, there are other problems. For example, while its graphics are good, the sound effects are definitely not state-of-the-art. Also, DigiTek should have expanded the skimpy documentation to include fuller descriptions of some of the courses' hazards.

In addition, the many players who enjoy miniature golf as a pleasant, stress-free recreation might be frustrated by a program element that isn't mentioned on the package—the software requires all participants to be at or under par for the first 18 holes in order to reach the second course on the disk, and that's not an easy task.

However, although DigiTek's product might not be for everyone, it does successfully capture the essence of its model, and miniature golf devotees should find much to like. *(DigiTek Software, 104 West Seneca, Suite 4, Tampa, FL 33612. C-64/$29.95.)*

—WALT LATOCHA

FIREZONE ..... B–

Firezone is a scaled-down version of a traditional wargame. Offering simplified gameplay, a relatively small battle area and a limited number of forces to command, it might be *too* simple for serious wargamers. However, I think it can be enjoyed by anyone who likes challenging strategy games.

Firezone lets you command either the European League or the Pacific Combine and includes a Demo mode where you can preview any of the game's nine scenarios. This is a useful feature because only the first three scenarios are described in the documentation. In addition, a built-in utility lets you modify the existing scenarios or create entirely new ones.

The best way to learn about terrain effects in this wargame is through experimentation. While the manual gives some hints, no numeric ratings for cover or movement costs are listed. Similarly, the manual doesn't contain charts listing the speed, the attack or defense strength or the range of any of the seven unit types.

Although I like Firezone, it does lack some of the features that have become almost standard for map-based wargames. For example, it doesn't let you peek under positioned units to see the underlying terrain. Thus, you're often forced to make strategic decisions without full knowledge of the strength of the enemy's position or, sometimes, your own.

This aside, Firezone is a good, introductory-level wargame for those who want to command their own armies without first having to attend West Point. *(Datasoft; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$24.95.)*

—BOB GUERRA

BATTLETECH C

For years, Infocom's text-only releases caused stirrings of excitement among the adventure gaming set. Unfortunately, my exposure to Infocom's first attempt at including graphics has been disappointing.

BattleTech is based on the popular board game of the same name. The computer version does contain some innovative touches, such as unique outtakes with a distinct Japanese flavor, that occasionally appear in an inset screen to show ground-level action and a character's responses during battle sequences.

As the character Jason Youngblood, you start the game with 20 credits and no skills. You have to spend some time learning how to use your BattleMech, a gigantic fighting machine. In the midst of your training, your planet is taken over by the Kuritans, and you must escape, hopefully with your training Mech and lots of cash.

Next, you must explore the huge countryside to find allies and a cache of Mech arms and supplies. Your job, of course, is to defeat the Kuritans, save the planet and find out the truth behind your father's death.

One complaint I have is that there's no Quit feature. My only alternative was to reboot. Another problem is that disk-loading time is excrutiatingly slow.

BattleTech is a good, enjoyable game, and the scrolling landscape is a pleasure to explore. Technically, however, it's not nearly up to Infocom's standards.

But you'll probably still find yourself becoming engrossed in the game and possibly even looking forward to a sequel. *(Infocom; distributed by Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025. C-64/$39.95.)*

—ART LEWIS KIMBALL

FIRST OVER GERMANY C

Flying daylight bombing raids over Nazi-held territory in 1942 was risky business. In First Over Germany (a.k.a. FOG), you're a green American second lieutenant with the dubious honor of piloting a B-17 on 25 such missions.

FOG gives you some feel for what piloting a bomber was like. However, certain aspects of the program are far too easy for a serious flight simulation. Some, like shooting at enemy aircraft, are too unrewarding, and others, like flying to your destination, are too time-consuming for the game to qualify as light entertainment. As a result, FOG isn't much of a challenge for an armchair flyer, nor much fun for an arcade gamer.

Overall, FOG's documentation is detailed and informative, although lacking at times, particularly in its confusing explanation of landing procedures. Equally disturbing are the number of on-screen spelling errors and the presence of at least one major, undocumented glitch. (Warning: Don't go to the long distance grid while forming up.)

There's nothing special about FOG's graphics, animation or sound. Despite these and other shortcomings, FOG deserves some praise for what it does accomplish: a mildly challenging, moderately realistic version of flying a B-17 bombing mission. *(Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$49.95.)*

—LEN POGGIALI ■

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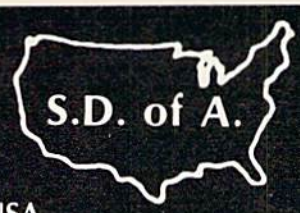

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MAIL RUN

An unusual application for the C-64, more complaints about Commodore, and modifying programs in RUN.

CULTURAL LITERACY

After reading the RUNning Ruminations editorial on cultural literacy in the June 1989 issue of *RUN*, I started writing additions to the list. They are: access, adapter, algorithm, alphanumeric, analog-to-digital, application, assemble, autodial, baud, binary, buffer, cartridge, checksum, color printer, compile, CPU, cursor, data processor, debug, delete, digital logic, directory, disk drive, DOS, edit, enhancement, expansion module, font, graphics, hard drive, hexadecimal, Kernal, laptop, line number, load, memory, menu driven, microprocessor, mode, motherboard, nybble, output, parallel port, Peek and Poke, PETSCII, power supply, restore, return, RF modulator, RGB monitor, routine, run, scratch, scroll, sector, serial port, shareware, shell, sprite, subroutine, terminal track, utilities, wrap around.

—CLYDE E. CORSON
LAWNDALE, CA

AND THAT'S THE WAY IT IS

One special hobby of mine is decoding radioteletype news broadcasts from other countries, which are sent over shortwave radio. These are the services the U.S. media use for international news reports, but in their opinionated, unedited and uncensored form. For me, it's exciting to compare foreign news reports (all in English) from countries with different political, economic and cultural viewpoints. The software I use for this is an inexpensive cartridge for the C-64.

—MARK WEIGAND
DENVER, CO

A SALUTE

Major Keith Hodges' letter ("Servicing Our Soldiers," Mail RUN, April 1989) expressed the feelings of many of us in the American military forces overseas about the problems we face in dealing with mail order firms in the States. You should note that we are six to ten hours ahead of the continental U.S., so it's late in the evening here before most companies open for business. By then, we're tired after a long day, and we don't like to be given the runaround on the phone. To Major Hodges, from me and all other computerists stationed outside the U.S.—we salute you, sir!

—SSG EVERETT S. BISHOP
APO, NY

SKIP TO MY LOU

I object to the deletion of the Commodore Clinic column. The advice Lou Wallace gave provided much valuable information and was definitely a plus in *RUN*. It will be greatly missed.

—CHARLES NG
TORONTO, ONTARIO, CANADA

Commodore Clinic has not been abandoned, but for the time being will continue to run on a bi-monthly basis, alternating with Telecomputing Workshop. We hope to reinstall Clinic as a regular monthly feature when space permits.

—EDITORS

MISSED THE POINT

As one of the co-authors of the 1581 Toolkit utilities package, I'd like to point out that it does copy files between the 1541, 1571 and 1581 disk drives. The author of the review (Software Gallery, June 1989) seemed to think that the file copier was not able to transfer files from 3¼- to 5¼-inch format disks. However, it is impossible to use a disk copier to transfer data from one format to the other.

—DAVID W. MARTIN
SEABROOK, TX

Reviewer Michael Cavanaugh states: "I think David missed the point of the third paragraph in the review. The file copier is the only utility that will work with both the 1571 and 1581 drives. What many 1581 users need is a way to transfer programs from 5¼-inch format to 3½-inch format. Many C-128 owners I know refuse to use the 1581 as their primary drive because so many commercial programs are not available in 3½-inch format."

—EDITORS

MODIFYING PROGRAMS IN *RUN*

May I modify a program published in *RUN* and add to it? I'd like an answer to publish in our *Sacramento Commodore Computer Club* newsletter.

—RAUL GRACIANO
SACRAMENTO, CA

Programmers and readers are encouraged to incorporate, modify or add to programs published in RUN. *These modified programs are for personal use or may be submitted to the magazine. A restriction applies if used for commercial purposes.*

You may claim authorship of programs you modified. However, if you relied heavily on the original program, you should credit its author and source.

—EDITORS

PLASTIC FRUSTRATION

The latch on my 1541 disk drive is broken. Commodore says it's not available, but a complete drive is. Why should I sacrifice a perfectly good drive for a 20-cent piece of plastic? Anyone with a screwdriver can install this part if they can get it. Do you know where I can get parts?

—ROY HOLLAND
LAS VEGAS, NV

Try one of Commodore's authorized repair facilities, several of whom advertise in RUN. *They perform repairs on disk drives for a cost less than the purchase price of a drive, and they might have the part for you to install yourself.*

—EDITORS

A CALL TO READERS

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■

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CARL BARONE,
NRI PROGRAMMER/ANALYST

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geoFolks

Meet some members of the GEOS clan whose creative applications can inspire GEOS users everywhere.

GEOS, the Graphic Environment Operating System, was released for the C-64 in March of 1986. Now, *RUN* looks at GEOS, over three years old, through interviews with some geoUsers par excellence.

Hundreds of thousands of Commodore users make up GEOS's installed base, and the "shakers and movers" of this community reflect the operating system's wide variety of applications. Desktop publishing and art are the specialties of some geoPeople, while others enjoy just collecting and sharing that art. There are also those who collect public domain utilities and pass them on to others through a shareware system or via the QuantumLink Commodore Information Network.

Q-Link itself provides a common ground for geoUsers, disseminating information and hosting the multitalented geoReps who answer questions. The entire geoNetwork is supported by the geoProgrammers, who provide utilities, conversion programs, entertainment and solutions to problems.

Let's meet some of these people and consider, for a moment, their geoViews.

By ELLEN RULE

GEOART AND GEOPUBLISHING

Roger Ledbetter (Q-Link: GEOWORLD). When his boss asked him to do a typesetting project, Roger Ledbetter put the capabilities of his C-64 and GEOS up against those of an Apple Macintosh computer. "The results of geoWrite text sent to a laser printer impressed a lot of people," he recalls.

Later, while talking to people on Q-Link, Roger saw the need for a GEOS-oriented publication, and in March of 1987 he launched *geoWorld*. Now in its third year, *geoWorld* (38 Santa Ynez St., Santa Barbara, CA 93103) is promoted by word-of-mouth advertising throughout the GEOS community.

For Roger, geoPublish has been the most important GEOS development. "In the earlier *geoWorld*s, we had to overlay the geoWrite pages with graphics. It was never perfect and involved a lot of mechanical cut and paste." Now he does it all with geoPublish. In fact, he uses geoPublish throughout his home-based printing business.

James Hastings-Trew. *GeoWorld* readers have doubtless seen some of James Hastings-Trew's cover art. "The problem with geoPaint," he explains, "is that you can't view the full-page image, and, without multiple printouts, you can't see if the design is balanced or in proportion. I pioneered the technique of laying out a design in geoPublish with the structured drawing tools, and, using the Paint Drivers, porting the design to geoPaint. Then I redraw, using the geoPaint tools."

Trained as an artist, James honed his skills in the graphics environment of GEOS, which ultimately led to his work as a paste-up artist in a professional graphics environment.

Many Q-Linkers remember the impact James made with the release of his MacGeoPaint conversion program. "There was another fellow who'd uploaded a few 'near misses,' but he didn't know how to make the files GEOS-compatible. I'm pretty adept with the Commodore disk drive, and I worked it out. Since then, others like Joe Buckley have done me one better by making the program run within the GEOS environment."

Now, due largely to James's ice-breaking efforts, even non-artistic GEOS users can enjoy the medley of graphics converted from the Mac.

Susan Lamb (Q-Link: YUMALAMB). Susan Lamb began using GEOS for its graphics capabilities. With ten years' experience as a graphic artist for a major San Diego newspaper, she saw the C-64 as a cost-effective graphics tool.

"Early on, I was interested in desktop publishing, using Print Shop and Newsroom. When I saw GEOS, I thought 'This is too good to be true!' " Approaching GEOS from a nonprogrammer's perspective, Susan sees new and innovative uses for geoPaint and geoPublish.

Recognized by *geoWorld* readers for her how-to articles, Susan was recently appointed editor of that magazine, where she combines her talents in design and layout. Susan hopes to release a book on geoPublish, and has recently come out with a new series of clip art disks, including object-oriented clip art, Mega Fonts and geoPublish page templates.

GEOCOLLECTORS

Mystic Jim. Assisted by other GEOS programmers, Mystic Jim has built up an impressive GEOS shareware library. "I got on Q-Link and learned what people needed. The most popular disk by far is Hack'n GEOS. With it, you can modify a disk, customize GEOS and change the icons and error messages."

Mystic Jim also offers Geotronix, a GEOS-compatible circuit board-design package that has been selling especially well in the German market, and Tim's Timer, a clock that automatically sets the GEOS clock on start-up.

Membership in Mystic Jim's shareware club (2388 Grape, Denver, CO 80207) costs $50 and includes a subscription to *geoWorld*, roughly 14 disk-sides of shareware utilities, graphics and fonts, plus your choice of three additional disks and access to a BBS where the programs are available for downloading. Currently, the club has more than 1000 members.

Peter & Paul Hughes. Paul Hughes, SYSOP PH of Q-Link's Graphics Support Group, also uses the handle Fleximan "when I want to do things as a user." His twin brother, Peter, the newly appointed GEOLIB PH, maintains Q-Link's GEOS software libraries. Peter and Paul were GEOS ambassadors from the outset, and user's group members still recall their trips up and down the New England coast demonstrating GEOS 1.0.

"It's come a long way since then," says Peter. "Although everything's been made better, the biggest improvement

is in the deskTop itself. Most people don't think of the deskTop as an application, but it is, just like geoPaint and geoWrite. The 1.0 version had hardly any drop-down menu options, but now look at it! It's a full-blown disk utility!"

Peter and Paul describe their specialty as "keeping up with everything new." They are best known on Q-Link for collecting utility programs, and if there's a question or problem, you can be sure they'll know of a utility to solve ►

ILLUSTRATED BY BOB SCHUCHMAN

it! Having written for *geoWorld* since its first issue, their expertise is detailed in the monthly GEOS Gems column. The twins demonstrate their broad-based, in-depth knowledge by doing demos at user's group meetings and assisting Berkeley Softworks at the World of Commodore shows.

Q-Link geoReps

In April of this year, Berkeley Softworks announced the appointment of five GEOS representatives to appear on QuantumLink. Each night, these geoReps answer questions posted on the message boards in the GEOS Arena.

Ken Slaughter (geoRep Ken). After an on-again, off-again start with his C-64, Ken Slaughter discovered GEOS. "I could do things with it that no other

software would do," he says. In QuantumLink's GEOS Arena (as FatBear1), Ken read and remembered the questions and answers posted on the boards, passing on what he learned to others. His knack for getting around problems led to an invitation to join the ranks of geoReps.

Ken sees support of the RAM expansion unit as the most important GEOS development. "Because of the nature of the C-64, everything is so disk-intensive. Without the REU, GEOS is really laboring."

GEOS's shortcomings? "Probably that it's so difficult to program. Few understand it, but a small core are doing really exceptional things within the operating system."

As for the future, Ken sees the appointment of the geoReps and the new geoLibrarian as indicative of Berkeley's renewed dedication to customer support. "Things are really starting to move on Q-Link!"

George Wells (geoRep GHW). Known on QuantumLink as "the printer driver expert," George Wells has programmed the 6502 chip for 15 years, designing peripherals and interfacing them with the computer hardware. Reluctant at

first to get involved with GEOS because such a complex system "would likely be fraught with bugs," George began using GEOS 1.3 for its ability to combine graphics and text, and eventually became a Beta-tester for Berkeley.

He praises the tremendous improvements in version 2.0 and expresses concern that people who tried an earlier version of GEOS may still fear the old problems. Used with the REU, he sees the latest release as "virtually bug free."

Although he recognizes the value of the public domain contributions, George would like to see improved printer drivers released by Berkeley. He dreams of drivers that would create banners, allow smoothing of text, enable print styles (bold, italic) while in NLQ mode and support NLQ text and graphics on the same page.

A true GEOS enthusiast, George points to the feats Berkeley Softworks has accomplished with a minimum amount of hardware. "To have similar abilities on any other system would involve tremendous expenditures for memory and hardware. Anyone who is curious can investigate GEOS with a very small initial investment."

Tim Bereman (geoRep Tim). Author of a prize-winning laser-matrix printer driver, Tim Bereman is modest about his programming accomplishments. Although he's dabbled some with geoProgrammer, he now complains amiably about his shortage of programming ideas. "Everyone kept beating me to the punch! So I set out to see how I could use other people's programs in the most efficient manner."

Tim's interest in the wide variety of GEOS applications and his willingness to help other people on QuantumLink's GEOS boards led to his appointment as a geoRep. "GEOS is so usable," Tim expounds. "I used to be a disk jockey, and I learned the intricacies of geoFile by setting up a database for the 3200 record albums I own."

He points to the versatility of the integrated GEOS packages as the feature most useful to him. "The applications

are independent, yet reinforce and support each other. Berkeley is always bettering their products. Version 2.0 is great! You have to wonder, what will they come up with in the future?"

Randy Padawer (geoRep RP). If you look on the map, you won't find a town named GEOSville, Tennessee, but that's the place QuantumLink's geoRep RP claims as home. A central player in the development of the geoRep program, Randy maintains that a solid sense of humor, important in any customer service, helps him "face antagonism with positive regard."

Over a year ago, Randy saw a need for some kind of "deputies" in the GEOS arena. "There were some Q-Link members who had been answering questions and helping newcomers at their own expense. They needed compensation."

Randy views the response to the geoRep program as "overwhelmingly positive." A Beta-tester for Berkeley, he expresses amazement "that a graphics interface has come to the C-64 at all. It's quite a feat of magic."

He lauds Brian Dougherty and the

Berkeley team for conceiving of and implementing GEOS. "Without them, there wouldn't be any GEOS. They've taken the machine to an incredible place." When Commodore made GEOS their official operating system, Randy maintains, "it changed the world of 8-bit computing."

Marshall Kragen (geoRep MK). When GEOS was first released, Marshall Kragen saw its integrated programs as an alternative to investing in an MS-DOS machine for his law firm. "When I saw

the ads, I didn't believe it could be true. I bet I was one of the first to have GEOS (version 1.0), but it really was just a toy in its early stages."

Marshall was an original Beta-tester for QuantumLink and part of a group who answered GEOS questions online every night. Eventually, the group succeeded in getting compensation and recognition via the geoRep program.

Thanks to geoWrite and geoPublish, Marshall produces most of his legal documents and a periodic newsletter, either on a dot matrix printer with an enhanced printer driver or through Skip Goetzinger (Q-Link: Laser Skip) at Laser Direct. "GEOS wasn't a real system until they came out with geoPublish. That made it as good as any other computer system around!"

GEOPROGRAMMERS

Bill Coleman. Although Bill Coleman has written numerous public domain and commercial applications for serious GEOS programmers, his crowning achievement is without doubt geoTerm, the GEOS-compatible terminal program.

"I didn't think it could be done. I worked on it a couple of years ago and just couldn't make it fly. When *RUN*'s technical manager, Lou Wallace, was putting together *RUN*'s GEOS Power Pak, he asked me to look at it again. All I did was change one byte, one instruction, and it started working!"

Bill's experience with GEOS goes back to version 1.1. "I was one of the 'consumer Beta-testers,' " he jokes. As the GEOS SYSOP of GEnie's Commodore Roundtable, Bill generously shares his technical expertise with fellow geoProgrammers. He also exercises his pen as a technical writer for *RUN* and *Transactor* magazines and, as Master Blaster, authors *geoWorld*'s Inside GEOS column.

While he sees geoPublish as Berkeley's best technical achievement, Bill hails geoProgrammer as the most important development for GEOS. "I never could have done geoTerm without it!"

Francis Kostella (Q-Link: FGK). Known mainly for his strategy games, Francis Kostella seems a bit surprised at his reputation. "I guess I like programming games," he admits. "When

writing a utility like a text editor or a conversion program, there's only one way it can work. With a game, you create your own universe. If you don't like the way the programming is going, you can change the rules!"

A graphic artist in the "real world," Francis was initially attracted to GEOS because of its proportional font capabilities. He wrote his own font editor and, when the *GEOS Programmers' Reference Guide* was released, "buried my face in it for two or three months."

After that, he wrote Circe, "the first of my GEOS programs that anybody saw." Second prize in a programming contest brought, among other rewards, geoProgrammer and a 1764 REU. "I guess you could say I became a 'GEOS power user,' " he laughs. "Version 2.0 was a wonderful development for GEOS C-64 users. Being able to access the REU and the 1581 drive keeps me using GEOS!"

Joe Buckley (Q-Link: Red Storm). When you see a GEOS utility with a curious label like Wrong Is Write, Thumbnail or Graphic Storm, you know Joe Buckley has been at the keyboard again. Defining his creative process as "programming by committee," Joe solicits program ideas from a circle of GEOS-operating friends and acquaintances, then carefully incorporates suggestions and criticisms. "I write my programs so a dead jellyfish could

use them," he quips, referring to their user-friendliness.

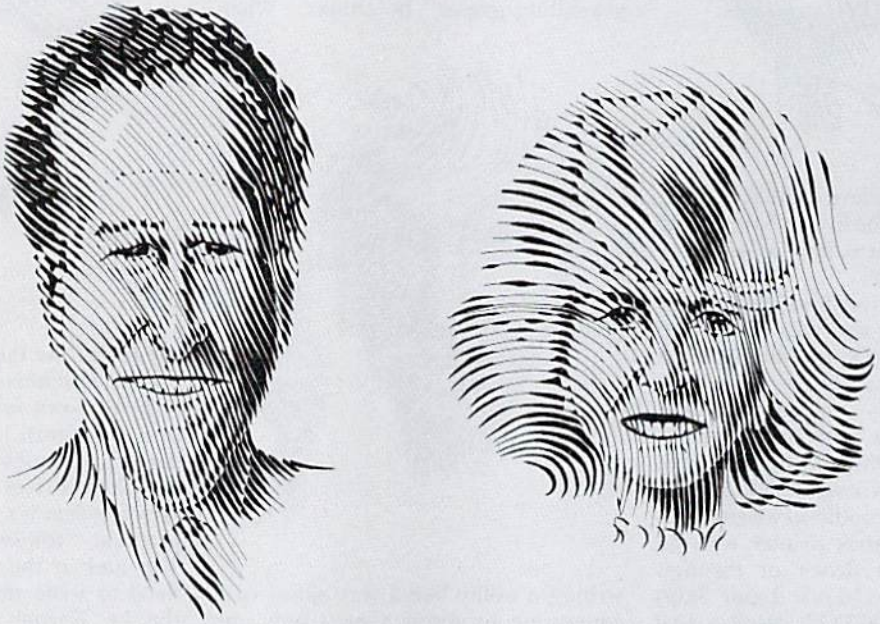
Best known for utilities and conversion programs, Joe is currently updating all his utilities to support 80 columns and three drives. His complaint about GEOS is that it's not truly device-independent. "Idiosyncracies on the deskTop and in the Kernal itself make it hard to write drivers for devices like the Lt. Kernal hard drive. But I'm working on it!"

For Joe, easily the most significant GEOS development has been geoProgrammer. He says, "Before geoProgrammer, it was such a hack to program for GEOS. GeoProgrammer was the thing that made third-party programming possible." ■

Ellen Rule is a GEOS user and a psychiatric R.N. who finds time not only for extensive user's group involvement, but also for a home-based business, Home Computer Resource.

Berkeley and its geoPlans

The introduction of GEOS three years ago revolutionized Commodore computing. What can GEOS users expect in the future?



RUN spoke with Berkeley's CEO and founder, Brian Dougherty, and marketing assistant, Staci Glovsky, to review where Berkeley has journeyed since GEOS was introduced, what it's doing now and what's in store for the future.

By ELLEN RULE

Installed Base and Improved Software

RUN: What is your estimate of the installed base of Commodore GEOS users?

Staci Glovsky: For GEOS 64/128, I would estimate it's about 1.6 million—that's international. Our second largest market is Germany. The 1.6 million includes users who have packages that Commodore distributed with their 64s.

RUN: How have the follow-up figures been? Can you estimate how many people are actually using the operating system?

SG: It's hard to say. The biggest seller is GEOS; on the Commodore side we're still seeing tremendous sales of that product. But a lot of people don't buy the follow-up products. When the first add-on products came out, the big sellers were packages like FontPack 1 and DeskPack 1. When geoWrite Workshop and geoWrite 128 were separate products, we saw a lot of them sold. More recently, geoPublish is one of the big sellers.

RUN: When you talked with *RUN*'s editor-in-chief, Dennis Brisson (see *RUN*, July 1987), you said that users were having trouble understanding GEOS as an operating system as opposed to a set of linked applications. Is the concept of the operating system still a problem for people?

Brian Dougherty: I think in the Commodore market that's become less of a problem. According to the Software Publishers Association, we have a 50 percent market share for productivity software for the Commodore market. With that kind of standardization of GEOS, there are plenty of people who can help new users with the principles, so we're not seeing as much of a problem with people understanding how the applications work.

We've also done some things to simplify the software. For instance, in the 2.0 version, once you get your input driver and printer driver selected, the software automatically switches them into place, whereas in the earlier releases that had to be done manually. So some of the problems people had, like understanding how a printer driver handles all printing through the operating system, and that you had to have this correct printer driver loaded, were eliminated when we refined the software. I think the combination of the software becoming more of a standard and our efforts to make it easier to use have helped to alleviate that.

Now in the Apple world, we're facing the same kind of problem, because we're a new operating system. Unless they're IIGS computer users, a lot of Apple II users haven't used a graphic operating system before. The advantage that we and they have is that, since we started by porting the later version of Commodore GEOS over to the Apple, their software has benefited from some of the improvements. Things like the automatic load of printer and input drivers came out in the first version of Apple GEOS.

RAM Expansion and Cross-Promotion

RUN: Looking back over the development of GEOS for the Commodore computers, are you happy with what you've done, and how might you have done things differently?

BD: I don't think there's too much we would have changed. We might have started working earlier with Commodore to promote sales of the RAM Expansion Unit (REU). The usability and performance of GEOS are so much enhanced if you have the REU. When Commodore developed the REU, there wasn't a use for it; then by the time we were supporting it, Commodore wasn't emphasizing the marketing of it. As a result, people now have a very hard time finding that unit.

We actually bought a bunch from Commodore for a direct-mail sale, but we quickly sold out. Then, because of the RAM chip shortage, we weren't able to get any more. Now another company has bought the rights for the chip from Commodore and is planning to market the RAM Expansion themselves. We certainly would like to cross-promote their product—for example, by including information on it in our GEOS packages.

RUN: Cross-promotion is something you've been involved with all along. Commodore distributed GEOS, and you seem to have a pretty solid relationship with QuantumLink.

BD: When we first shipped GEOS, we had the Quantum telecommunications software on the back of the disk. We have basically had a strong strategic relationship with them ever since, including the PC Link service for Tandy and AppleLink.

GEOS and Other Computers

RUN: Is AppleLink connected with Apple GEOS?

BD: Right, we're providing similar customer service through AppleLink. I think for both Quantum and us, though, AppleLink hasn't been as good a market. I think part of that has to do with better relationships with Commodore than either we or Quantum have had with Apple. Quantum actually has a relationship with Apple, but I don't think Apple gives them the kind of support and free rein to make the service enticing that Commodore does. From our point of view, we were supposed to get co-marketing support from Apple, but, basically for legal reasons, it didn't materialize.

We really believe in telecommunications, and the Q-Link service continues to be one of the strongest services that Quantum has, although the PC is coming on strong now. It's basically a die-hard group of Commodore users that have kept Q-Link a very interesting telecommunications service. We believe that with Quantum, once a good E-mail system and some other services are made available, a national telecommunications network will develop where most people will have either a Commodore or a PC.

RUN: In general, how are you feeling about your Apple endeavors?

BD: It was a natural for us to move the GEOS environment over to the Apple, because it has a similar microprocessor and a similar type of user base to the Commodore. We still think it was the right thing to do, but it hasn't been as profitable as we expected. We haven't done as well in the Apple market as in the Commodore market, largely because the Commodore market has the active support of the hardware manufacturer.

It's really a matter of awareness. Interestingly enough, the Commodore magazines have a much larger readership than the Apple magazines. So, even though there are almost as many Apple II users out there as Commodore users, it's harder to reach them. We were really counting on help from Apple to reach those users, and when that didn't materialize, it became a lot harder to succeed in the Apple market.

RUN: Is there cross-system file compatibility? If someone uploads an Apple geoPaint file, can I download it for my C-64 geoPaint?

SG: No. The only thing we have for the Apple is a program that lets you go from GEOS to ASCII files.

RUN: I hear rumors about a PC GEOS. Are you talking about that yet?

BD: It's still pretty much under wraps. We're telling people that we're obviously working on a product for the PC market, because it would be crazy not to! It's the largest installed base of personal computers. In both the Com- ►

modore and Apple II markets, we've done the major productivity applications. We'll probably continue to come out with additional products, and we'll continue to improve the products we have—GEOS 2.0 is an example—but as we look for new markets to enter, the PC is obviously next.

Since PCs have a good deal more basic memory—we can pretty much count on a configuration of 512K—we can do a lot more than we've done in the 8-bit world, where all we could really count on was a 64K or 128K memory space. So, the products we're creating for the PC market are going to be substantially more sophisticated than those for the 8-bit market. But we're not really announcing yet—you'll have to stay tuned for details about what the PC product is going to be.

RUN: Are you planning to get involved with other existing graphics environments, such as the Macintosh or the Amiga? Perhaps enhanced products for those operating systems?

BD: We've actually looked at those systems, and we probably will eventually come out with something for them, but the PC will be the next platform where anybody sees products from us.

RUN: Do you see any benefit to C-64 owners in GEOS being developed for other machines?

SG: I think it is positive, and that's mostly from feedback from users. Software Publishers Association figures show that the C-64/128 market is definitely declining, although not as rapidly as the Apple II market. Sales have been down industry-wide, with the exception of categories like recreational programs. That's one reason we've gone into other areas. GEOS has been very successful for us and is still bringing in money for the company, but the Commodore market is not going to last forever.

A lot of people are using a PC at the office or upgrading to another machine at home. People who are familiar with GEOS will find it easier to switch to another machine running a graphics environment.

New Products for Commodore Owners?

RUN: Will we ever see version 2.0 of geoPublish?

SG: I wish that we could release the C-128 version of geoPublish, because I've had so many people ask, but we made the decision a long time ago not to do it. As far as I know, one of the factors that went into that decision was that, even for the 64, desktop publishing didn't take off like we expected. GeoPublish has done well, but not in relation to how much money and time went into it. If you add up all the salaries that went into developing it, that product probably cost well over $100,000, and that's not counting packaging, technical writing, marketing and everything else that's involved.

I think a lot of Commodore users sometimes don't have that perspective, because they haven't seen what it's like on the other side. I've had so many requests for so many GEOS products that would be really neat, but we have to justify putting the money and the time into developing them next to what the popularity of the product is going to be. To give you an example, we must have put more than two years into developing geoBasic, which you may not have heard about. In the end, for financial and interest reasons, it was put on hold.

RUN: Is that also the case for a geoProgrammer 2.0?

SG: There seems to be a very small number of machine language programmers. I would say that out of all our products, geoProgrammer was by far the least popular. We had a programming contest and the number of people who entered was very small, where with our geoPublish contest, we had several hundred people send in entries; some really neat things came in! With geoProgrammer, we couldn't get the same amount of interest, so, in the end, geoProgrammer 2.0 was put on hold. In general, I think more people are interested in using applications in the GEOS environment than they are in programming their own.

RUN: At one point, there was some talk about Berkeley releasing a mouse with a built-in clock. Did that ever fly?

SG: No, it didn't; it went down the hole. That was our GEOS mouse project; Commodore released the 1351 mouse while we were developing it. We develop most of our products in-house, but with that one, we had an outside firm involved. We actually did spend a lot of time on development, but as soon as Commodore released the 1351, it eliminated the need for our mouse, so we dropped the project.

RUN: Are there any new products for Commodore GEOS on the horizon, such as a telecommunications package or an object-oriented CAD program?

SG: No. Most of our engineers are working on other projects. The only things I could see coming out, and I don't know if or when they will, are geoBasic and geoProgrammer 2.0, and that's because most of the development work is already done.

RUN: Where does Berkeley stand with third-party developers for GEOS, such as Timeworks?

SG: That hasn't taken off as much as we'd like, but we definitely do promote third-party development. We'll do everything we can to help any party that wants to develop under GEOS.

User's Group Offers

RUN: You've been running a "buy one, get one free" promotion. Are you planning any other promotions for Commodore GEOS?

SG: Yes. One of them is a user's group promotion, and that's still in the works. We try to send out mailings quarterly to the user's groups—demonstration disks, new product and promotion announcements—sort of updating them on what's going on. There's going to be a special offer for user's groups to make group purchases. With so many of a product, they get a large discount.

We'll be attending the trade shows, such as World of Commodore in Philadelphia in September and in Toronto in November. We've been selling some of our older products at the shows, and we'll probably be offering those to user's groups, as well, at greatly reduced prices. We're also going to have some new things going into our packages, such as dollars-off coupons and premiums, a T-shirt offer—things like that.

Emphasizing Service

RUN: I get the feeling that C-64 GEOS owners who have seen a slowdown in new products fear that Berkeley is headed away from the Commodore market. Can you address that?

SG: Even though Berkeley is going on to other products, we're not abandoning the Commodore. In fact, Commodore is still our number-one seller, and we're pretty much doing everything we can to continue providing service. We're responding to problems, and that's our main emphasis.

We've done a couple of things in that regard. Our telephone support lines are up and running again. We had discontinued the service for a couple of months, but, because of the negative feedback, we decided to open them up again. We had reached a point where we couldn't handle the amount of customer support that was requested, and it was crazy trying to get everything done and not really doing a good job at anything. The majority of callers just don't read the manual, and it takes a long time to help them.

The other thing we're doing differently is product fulfillment, where people place an order, send in for a disk replacement, or whatever. We've taken that off the technical support lines. We have a recorder, so now all someone has to do is call and state what they want and any other pertinent information. We've got people taking the messages every day, so callers are getting help quickly.

Another thing—we weren't able to get to Q-Link often enough, so now we have the geoReps. We kicked this idea around, but until recently, people were so busy just answering the phone and responding to letters, we couldn't develop this program.

Five people act as geoReps. They're on-line answering questions in their own particular areas, by product or application. If someone has a question, they can get it answered within 24 hours. The geoReps help each other out if there's something they don't know; they're really a top-notch bunch!

BD: There are really two issues here. One is the rate at which we introduce new products, and the other is our focus on and support of the Commodore market. A few major categories of productivity software, such as desktop publishers, databases and spreadsheets, were wide open when we came out with GEOS, and we worked very hard to cover them. We did cover them, and the only thing left for us to do is improve those products.

In order to release a new version, we need to amass a lot of improvements before it's worthwhile to make products in the field obsolete and put everybody through the ordeal of upgrading their software. We didn't want to get into a situation where we were coming out with just a few small feature enhancements every three to six months. GEOS 2.0 was a major upgrade; we improved all our products and added a lot to the GEOS package.

We have a couple of products that we've actually developed, but our marketing research says it doesn't make sense to put them into full distribution, because they fill small niches in the C-64 market. We have a geoBasic that's a pretty slick full-fledged Basic product, but our experience with geoProgrammer was that only a small segment of the market is really into programming. When we put geoProgrammer into full distribution, a lot of outlets didn't sell enough to warrant carrying it. So we'll probably release some products on a direct-mail basis, because they just don't have a wide appeal. The products with general appeal, like 'Calc and 'File and 'Publish, we've already put into the marketplace.

We're still very much focused on the Commodore market, and we believe in it. We've got a whole productivity line. For the existing hardware base, it's now a refining and marketing process to find out what the users want and reach people we haven't reached. We are developing software for other markets, but that doesn't mean we aren't continuing to focus on the Commodore market. We definitely want to keep that alive. We worked very hard to bring all these products to that market and to give the machine new life, and we want to keep the ball rolling. ■

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geoSlides

You'll find that viewing Doodle! and Koala files from within GEOS is easy as pie with this program.

By JOE BUCKLEY

Since purchasing GEOS V1.2, I've developed the annoying habit of trying to do most, if not all, of my computing from within GEOS. When I come across something that supposedly "can't be done" in that environment, I attempt to write a program to fill the gap.

For instance, I like to view Doodle! and Koala files (both uncompressed and compressed versions) on my C-64. Normally, I do this with the help of the public domain display/conversion utilities DKCOMPRESS and DKSLIDE. But because I'm handy with geoProgrammer, I decided to look for a way to view the Doodle! and Koala files from within GEOS. This program, geoSlides, is the result.

Pictures on Display

GeoSlides is strictly a display utility; it cannot perform file conversions. (For a conversion utility, see my "Import Runner" program on *RUN*'s GEOS Power Pak II disk.) GeoSlides lets you display both normal (uncompressed) and compressed Koala- and Doodle!-format files.

Because the display is completely automated, standard file-naming conventions must be followed: Normal Doodle! files must have the "DD" prefix; compressed Doodle! files must begin with "JJ"; and compressed Koala files must start with "GG". Uncompressed Koala files, however, are an interesting exception to the conventions.

If the file to be viewed doesn't conform to the above conventions, then it's automatically assumed to be an uncompressed Koala file. This is due to the fact that standard Koala filenames all begin with a nonstandard graphic character that tells the C-64 to print orange text. Under GEOS, since the graphic character is not recognized, it causes garbage characters to be displayed. For example, try renaming one of these files under GEOS. You can do it, but the display looks weird.

If you wish to avoid this corruption of the display, you can rename the Koala file to whatever you want, as long as the first two characters don't match any of the above conventions.

Just as RUN Paint can load and display Doodle! and Koala files that have been renamed, geoSlides can display RUN Paint screens if they're renamed to conform to the standards above. Only the high-resolution screens need to be renamed to the Doodle! standard; the multi-color, Koala-compatible files will be displayed in accordance with the above assumption.

Modes of Operation

GeoSlides has two modes of operation. In View mode (Commodore/V), you're given a dialog box from which you can select and view any one of the first 160 Commodore DOS files. (These are the files with the default CBM logo file folder as an icon.) You don't have to tell geoSlides what type of file you wish to view; it makes the proper display decisions based solely on the filename. The file remains displayed until you press the mouse button, which returns you to the file-handler dialog box and highlights the file you just viewed.

In Slide mode (Commodore/S), you're given a slide show of the first 160 files on the current disk, each remaining on the screen for approximately ten seconds. If you want to abort the present file but continue the slide show, click the mouse button quickly, and you'll move on to the next. To abort the show and return to the main menu, hold down the mouse button.

The Slide option assumes the default drive, and will not prompt you for the drive you want to display from in a multi-drive system. To view files on another disk or drive, first go through the View option's dialog box and select Disk or Drive. In an REU-equipped system, the file handler allows you access to three disk drives.

Thanks to the GEOS turboDOS routines, geoSlides can load a file almost three times faster than DKCOMPRESS or DKSLIDE.

GeoSlides displays the Koala-format files using the VIC II chip's multi-color, medium-resolution Graphics mode. To my knowledge, this is the first program to do so from within GEOS. R

Joe Buckley is a renowned GEOS expert who has written many utilities and other programs for GEOS.

Running Instructions: **Type in Listing 1 in 64 mode, using *RUN*'s Checksum program, save it and run it with a GEOS work disk in drive 8.**

Listing 1. geoSlides program. **(Available on ReRUN disk. See page 57.)**

```
1 REM * CREATES GEOS PROGRAM 'G
  EOSLIDES' *              :REM*34
2 PRINT"{SHFT CLR}PUT GEOS WORK
   DISK IN DRIVE, HIT SHIFT":WA
  IT 653,1                 :REM*97
3 DR=8:FI$="GEOSLIDES":TY$=CHR$
  (6):GOTO11               :REM*69
4 HI=INT(A/256):PRINT#15,"M-R"C
  HR$(A-HI*256)CHR$(HI):REM*252
5 GET#15,A$:A=ASC(A$+CHR$(Ø)):R
  ETURN                    :REM*92
6 PRINT#15,"U1:"2;Ø;TR;SC:RETUR
  N                        :REM*248
7 PRINT#15,"U2:"2;Ø;TR;SC:RETUR
  N                        :REM*24Ø ►
```

RUN it right: **C-64 or C-128 (in 40-Column mode); GEOS version 2.0.**

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```
8 PRINT#15,"B-P:"2;PS:RETURN
                          :REM*79
9 GET#2,A$:A$=LEFT$(A$+CHR$(Ø),
  1):RETURN               :REM*188
1Ø PRINT#2,CHR$(A);:RETURN
                          :REM*144
11 DIM D$(29):PRINT "WORKING...
   ":OPEN3,DR,3,FI$+",U,W"
                          :REM*181
12 READ A$:PRINT ".";:IF A$="-1
   " THEN CLOSE 3:GOTO 17
                          :REM*93
13 FOR I=1 TO LEN(A$):IF MID$(A
   $,I,1)=" " THEN A$=LEFT$(A$,
   I-1)+MID$(A$,I+1)      :REM*223
14 NEXT:FOR I=1 TO LEN(A$) STEP
    2:H$=MID$(A$,I,1):L$=MID$(A
   $,I+1,1)               :REM*225
15 H=16*(VAL(H$)-(H$>"@"ANDH$<"
   G")*(ASC(H$)-55))      :REM*198
16 PRINT#3,CHR$(H+(VAL(L$)-(L$>
   "@"ANDL$<"G")*(ASC(L$)-55)))
   ;:NEXT:GOTO 12         :REM*33
17 OPEN 15,DR,15:OPEN 2,DR,2,"#
   ":OPEN 3,DR,3,FI$:CLOSE 3
                          :REM*239
18 A=656:GOSUB 4:DB=A:A=66Ø:GOS
   UB 4:DE=A:TR=18:SC=DB:GOSUB
   6                      :REM*125
19 PS=DE:GOSUB 8:FORI=Ø TO 29:G
   OSUB 9:D$(I)=A$:NEXT:TR=ASC(
   D$(1))                 :REM*229
2Ø SC=ASC(D$(2)):GOSUB 6:GOSUB
   9:XT$=A$:GOSUB 9:XS$=A$:GOSU
   B 6                    :REM*115
21 A=Ø:GOSUB 1Ø:A=255:GOSUB 1Ø:
   A=3:GOSUB 1Ø:A=21:GOSUB 1Ø:G
   OSUB 7                 :REM*199
22 D$(19)=D$(1):D$(2Ø)=D$(2):D$
   (1)=XT$:D$(2)=XS$:D$(21)=CHR
   $(Ø):D$(22)=TY$        :REM*58
23 D$(23)=CHR$(89):D$(24)=CHR$(
   4)                      :REM*9
24 D$(25)=CHR$(15):D$(26)=CHR$(
   13):D$(27)=CHR$(9)     :REM*12Ø
25 TR=18:SC=DB:GOSUB 6:PS=DE:GO
   SUB 8                  :REM*72
26 FORI=Ø TO 29:PRINT#2,LEFT$(D
   $(I),1);:NEXT:GOSUB 7:CLOSE
   2:CLOSE 15             :REM*1Ø1
27 PRINT:PRINT"DONE!":END
                          :REM*251
28 :                      :REM*86
1ØØ REM FILE HEADER       :REM*9
1Ø1 DATA Ø315BFØØØØØØ1FFFFF12 8
    1A31838Ø5187C59183E 21159FC
    1143FCD1467E1         :REM*173
1Ø2 DATA 1FFFFFØA041CØ618EØØ6 2
    7ØØØ378ØØØ1CØØØ1FCØ ØØ2ECØØ
    Ø7F4ØØØ418ØØØ         :REM*126
1Ø3 DATA 7FØØØØ22ØØØØ83Ø6ØØØØ Ø
    45F16ØØØ4536C696465 2Ø53686
    F772Ø2Ø56312E         :REM*51
1Ø4 DATA 3ØØØØØØØØ5265642Ø53 7
    46F726D2Ø2Ø2Ø2Ø2Ø2Ø 2Ø2Ø2Ø2
    ØØØØØØØØØØØØ         :REM*49
1Ø5 DATA ØØØØØØØØØØØØØØØØØØ Ø
    ØØØØØØØØØØØØØØØØØ ØØØØØØØ
    ØØØØØØØØØØØØ         :REM*47
1Ø6 DATA ØØØØØØØØØØØØØØØØ2Ø2Ø 5
    6696577207374616E64 6172642
    Ø677261706869          :REM*224
1Ø7 DATA 632Ø66696C65732Ø6672 6
    F6D2Ø77697468696E2Ø 7468652
    Ø47454F532Ø65          :REM*15
1Ø8 DATA 6E7669726F6E6D656E74 2
    EØØØØØØØØØØØØØØØØØ ØØØØØØØ
    ØØØØØØØØØØØØ          :REM*73
1Ø9 DATA ØØØØØØØØØØØØØØØØØØØ Ø
    ØØØØØØØ                :REM*2
11Ø REM FILE BODY          :REM*238
111 DATA 2Ø4BC12Ø2AØ42ØB6ØCAD 8
    9848D77162ØØØ14A9Ø4 85Ø3A99
    E85Ø2A9ØØ2Ø51          :REM*169
112 DATA C1A913ØDA484A9B58DA3 8
    46Ø2ØA8C1Ø5Ø2Ø1ØØØØ ØØØ33FØ
    1C7Ø5ØØØ149ØØ          :REM*19
113 DATA AØØ3F9ØØC3Ø749ØØAØØ6 7
    EØØAC182D2Ø67656F53 6C69646
    5732Ø2D1B1654          :REM*48
114 DATA ØØB9436F7Ø7972696768 7
    42Ø28432Ø31393839 2C2Ø185
    2554E1B2Ø6D61          :REM*114
115 DATA 67617A696E65ØØA9ØØ8D 7
    B168D7C16A9118D6116 ADØFCØC
    9139ØØAAD13CØ          :REM*131
116 DATA 1Ø05A94Ø8D61166ØØØØE Ø
    ØØØ48ØØØ2AFØ48ØBEØ4 B4Ø48Ø1
    6Ø546696C65ØØ          :REM*2ØØ
117 DATA 53686F772Ø46696C65ØØ Ø
    F2BØØØØ4FØØ82F7Ø4ØØ 4ØØ5Ø3Ø
    5ØØ49Ø58F23ØØ          :REM*232
118 DATA 4314AØ23ØØ4314B123ØØ 4
    314C223ØØ4314D323ØØ 4314E42
    3ØØ4314F523ØØ          :REM*48
119 DATA 4314Ø624ØØ4314517569 7
    41439ØØ8Ø18511BØØ49 6E666F7
    26D6174696F6E          :REM*79
12Ø DATA 1439ØØ8Ø18491BØØØF2C 1
    5ØØ54ØØ8227Ø5ØØ7E Ø5 33Ø5ØØE
    5Ø55669657714          :REM*1Ø6
121 DATA 3EØØ8Ø18561BØØ536C69 6
    465143EØØ8Ø18531BØØ 2ØBDC12
    Ø27ØD4C2CC22Ø          :REM*191
122 DATA BDC1A91Ø85Ø3A9FD85Ø2 2
    Ø56C2A91185Ø3A9ØA85 Ø22Ø56C
    2AD1D85DØ16A9          :REM*44
123 DATA 1185Ø3A98285Ø22Ø56C2 A
    91185Ø3A98F85Ø22Ø56 C26Ø2ØB
    DC1A9ØØ8D6Ø16          :REM*118
124 DATA 2ØB2ØAB85ØØ32Ø12ØBAD 1
    D85C9Ø2DØØ16ØAD7C16 CDEØØ5D
    ØØ6AD7B16CDDF          :REM*185
125 DATA Ø5DØØ62Ø9BØ6B85ØDFAD 7
    C16CDE2Ø5DØØ6AD7B16 CDE1Ø5D
    ØØ62ØB8Ø7B85Ø          :REM*43
126 DATA C9AD7C16CDE4Ø5DØØ6AD 7
    B16CDE3Ø5DØØ62Ø63Ø9 B85ØB32
    ØØFØ8B85ØAD44          :REM*68
127 DATA 444A4A47472ØBDC1A9FF 8
    D6Ø162ØB4C1B1ØADØ16 ØØA9168
    5ØFA9DØ85ØEA9          :REM*239
128 DATA ØØ851ØA9AØ8511A9ØØ85 1
    685172Ø3BC2A9AØ38E5 118D731
    6A9DØ8D6216A9          :REM*2Ø4
129 DATA 168D6316ADØ5853ØØ16Ø A
    ØØØAD631685Ø3AD6216 85Ø2B1Ø
    2FØB2A91685Ø5          :REM*242
13Ø DATA A97B85Ø4A2Ø2AØØ42Ø65 C
    2AD7C16CDEØØ5DØØ6AD 7B16CDD
    FØ5DØØ62Ø9BØ6          :REM*69
131 DATA B85Ø2FAD7C16CDE2Ø5DØ Ø
    6AD7B16CDE1Ø5DØØ62Ø B8Ø7B85
    Ø19AD7C16CDE4          :REM*73
132 DATA Ø5DØØ6AD7B16CDE3Ø5DØ Ø
    62Ø63Ø9B85ØØ32ØØFØ8 18A9116
    D62168D62169Ø          :REM*42
133 DATA Ø3EE6316B85Ø85A9ØA85 Ø
    3A98785Ø22Ø36C1A916 85ØFA97
    B85ØE2ØØBC28A          :REM*249
134 DATA FØ1286FBA9ØA85Ø3A9A7 8
    5Ø22Ø36C1A6FB4C9515 ADØ2848
    5Ø5ADØ18485Ø4          :REM*1Ø7
135 DATA A92485Ø7A9328 5Ø6A923 8
    511A9FE851Ø2ØFFC18A FØ1286F
    BA9ØA85Ø3A9A7          :REM*126
136 DATA 85Ø22Ø36C1A6FB4C9515 A
    9ØA85Ø3A9A785Ø22Ø36 C12ØB7C
    1ØØ28ØØ6Ø4Ø1F          :REM*168
137 DATA 2ØB7C1ØØ24ØØ4ØØØ42Ø B
    4C14ØØØØØ44ØØ2Ø5CC2 ADØØDD8
    D6416ADØ2DD8D          :REM*113
138 DATA 6516AD15DØ8D6616AD18 D
    Ø8D6716ADØ2DDØ9Ø38D Ø2DDADØ
    ØDD29FCØ9Ø28D          :REM*2Ø5
139 DATA ØØDDA9Ø88D18DØA9ØØ8D 1
    5DØA91Ø8DF8432Ø5FC2 AD6Ø16F
    ØØ3B85ØØD782Ø          :REM*16
14Ø DATA 86FE58ADØ5853ØF6B85Ø 1
    FAD61168D6A16A9ØØ8D 6B16782
    Ø86FE58ADØ585          :REM*38
141 DATA 1ØØACE6B16DØF1CE6A16 D
    ØEC2Ø5CC2AD64168DØØ DDAD651
    68DØ2DDAD6616          :REM*48
142 DATA 8D15DØAD67168D18DØ2Ø 5
    FC22Ø53C2ØØC7ØØØØ3F Ø16ØA9Ø
    A85Ø3A98785Ø2          :REM*169
143 DATA 2Ø36C1A91685ØFA97B85 Ø
    E2ØØBC28AFØ1286FBA9 ØA85Ø3A
    9A785Ø22Ø36C1          :REM*9Ø
144 DATA A6FB4C9515ADØ28485Ø5 A
    DØ18485Ø4A98Ø85ØBA9 ØØ85ØAA
    9ØØ85ØC85ØD2Ø          :REM*173
145 DATA B6C22ØB6C2A92485Ø3A9 Ø
    Ø85Ø22ØBAØ94CF8Ø6A9 ØA85Ø3A
    98785Ø22Ø36C1          :REM*5
146 DATA A91685ØFA97B85ØE2ØØB C
    28AFØ1286FBA9ØA85Ø3 A9A785Ø
    22Ø36C1A6FB4C          :REM*138
147 DATA 9515ADØ28485Ø5ADØ184 8
    5Ø4A92785Ø7A97485Ø6 A927851
    1A9FE851Ø2ØFF          :REM*2Ø
148 DATA C18AFØ1286FBA9ØA85Ø3 A
    9A785Ø22Ø36C1A6FB4C 9515A9Ø
    A85Ø3A9A785Ø2          :REM*79
149 DATA 2Ø36C12ØB7C1ØØ28ØØ6Ø 4
    Ø1F2ØB7C14Ø47ØØ4ØE8 Ø32ØB4C
    14ØØØØØ44ØØ2Ø          :REM*99
15Ø DATA 5CC22ØB7C1284BØØD8E8 Ø
    3AD1Ø4F8D21DØADØØDD 8D6416A
    DØ2DD8D6516AD          :REM*27
151 DATA 11DØ8D6616AD15DØ8D67 1
    6AD16DØ8D6816AD18DØ 8D6916A
    DØ2DDØ9Ø38DØ2          :REM*198
152 DATA DDADØØDD29FCØ9Ø28DØØ D
    DA9Ø88D18DØA9ØØ8D15 DØAD11D
    ØØ92Ø8D11DØAD          :REM*165
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153 DATA 16D00910801 6D0A9108D F
    8432050FC2AD60160F003 B8500D7
    8208600FE58AD05       :REM*60
154 DATA 8530F6B8501FAD61168D 6
    A16A9008D6B16782086 FE58AD0
    585100ACE6B16         :REM*104
155 DATA D0F1CE6A16D0EC205CC2 A
    D64168D00DDAD65168D 020DDAD6
    6168D11D0AD67         :REM*115
156 DATA 168D15D0AD68168D16D0 A
    D69168D18D0205FC220 53C200C
    70000300F0160A9       :REM*153
157 DATA 0A8503A98785022036C1 A
    916850FA97B850E200B C28AF01
    286FBA90A8503         :REM*122
158 DATA A9A7850220360C1A6FB4C 9
    515AD028485050AD0184 8504A98
    0850BA900850A         :REM*170
159 DATA A900850C850D20B6C220 B
    6C2A92885030A900850 20BA094
    C6C08A503851 7        :REM*203
160 DATA A502851618A974651685 1
    6A9276517851720EE09 C9FEF00
    620F809B850F3         :REM*146
161 DATA 20EE09482 0EE09AA682 0 F
    809CAD0FAB850E120B6 C2E000F
    00268686 0A000        :REM*41
162 DATA 9108248E602D002E603A5 0
    3C517D004A502C516B0 0268606
    8A90A8503A9A7         :REM*189
163 DATA 8502203 6C168686868A2 0
    B4C9515A90A8503A932 8502205
    6C2600811 39C11       :REM*72
164 DATA 0B090B3F0A01094600 0D 1
    84265726B656C65792 0 536F667
    468656164733A         :REM*31
165 DATA 1B0D0D2020546865206C 6
    967687465737420D69 6E64732
    0617265207 76F        :REM*135
166 DATA 726B696E6720776974680
    D4265726B656C65792E 0005000
    16E005A03D200         :REM*197
167 DATA 6E076E005A067E006618 2
    D2057 6F726B696E6720 2D1B000
    502010005003          :REM*234
168 DATA 3F0178 0A9018D6F1620 A
    1C220B4C1A00AD0160 0 A91685 0
    FA9D085 0EA900        :REM*123
169 DATA 851 0A9A08511A9 0 08516 8
    5172 03BC2A9A038E511 8D73162
    0120CA9168DB4         :REM*97
170 DATA 0BA99D8DB30BAD8984C9 0
    8F01BC909D00DA9168D B40BA9A
    E8DB30BB8500A         :REM*22
171 DATA A9168DB40BA9BF8DB30B A
    90B8503A9AA8502A900 8DA03C8
    DA40CAD8D84C9         :REM*87
172 DATA 01F00AA90C8DA40CA94D 8
    DA30CA9008516851 7A9 0008D7B1
    6A91685 0DA97B        :REM*190
173 DATA 85 C2056C2AD1D85C902 D
    0016 C906D00EA90B85 03A9C78
    5022056C24CB2         :REM*203
174 DATA 0AC912D0034CB20AAD6F 1
    6850 2C602A9118504A2 02A0042
    060C1A5021869         :REM*66
175 DATA D085 2A503691685 3A9 1
    6850 5A97B8504A0042 0 65C2AD7
    B16D00EA90B85         :REM*43
176 DATA 03A9D1850220560C24CB2 0
    A6081 0B83 09DB0B0B83 110 000
    51117 06112912        :REM*219
177 DATA 113BA30C02114D1340 0D 0
    081 0B1 018E60B011040 0 0081 0B1
    8180 00C011040        :REM*245
178 DATA 0 0184F6E206469736B3A 1
    B00185 06C6561736520 696E736
    572742 06E6577        :REM*135
179 DATA 206469736B2E1B00 1846 6
    96C652 06E6F742 0666F 756E642
    E1B0 0A000B91E        :REM*64
180 DATA 84999D163005C8C01 0D0 F
    3A900999D16A8B93084 99AE163
    005C8C01 0D0F3        :REM*75
181 DATA A900099AE16A8B9DC8899 B
    F16300 5C8C01 0D0F3A9 0099AE1
    66005FF82FE80         :REM*72
182 DATA 0400820380040 0B80380 F
    800C0000380CC000000 0380C6F
    DD99E0380C6E0         :REM*218
183 DATA D9B3038 0C6C0D9B3038 0 C
    6C0CF3F038 0C6C0CF30 0380CCC
    0C6330380F8C0         :REM*200
184 DATA C61E0380040 0820380 04 0
    0810306FF817F05FF0C B14D0CB
    20A0610AB0C20         :REM*119
185 DATA F10CA9128D1D854CBFC2 A
    D89848D82218D7416AD 8D848D7
    616C902D025AD         :REM*8
186 DATA 0FC0C92090 1EAD9084F0 1
    92900F8D7516AD8E8429 0FCD751
    6F007ADC48829         :REM*170
187 DATA 400F003EE8D844CE1C1AE 8
    D84CAD0016020 01 0D8D 74164CB
    0C2AD8D84C901         :REM*238
188 DATA F01B1869088D7516AD74 1
    61869 1CD75169002A9 08A8B98
    684F0F0986 0AD        :REM*117
189 DATA 74166 0AD82212034 0DAD 7
    6168D8D846 0CD8984F0 0620B0C
    220A1C26 0A916        :REM*43
190 DATA 8521A9D0852 0AD7316A0 1
    18C7 0168D6D16A90F2 0 39C1A52
    18D7A16A5208D         :REM*236
191 DATA 79162 0B1 0DA96C85 06A9 7
    B850720 24C1A92485 06 A9FF202
    7C1AD6D16C908         :REM*232
192 DATA 900920ABC1111 0086C1 0 1
    0A90F8DAA84A92D8DA9 84A9018
    D6E16AD6D16C9         :REM*24
193 DATA 08900FAD6F1638E904AA B
    002A200E88E6E164CF2 0DA9008
    509A94385 08A9        :REM*237
194 DATA 0085 0BA9BF850AA92485 0
    6A96B850760850 2A90A 8504A00
    4A2022060C120         :REM*209
195 DATA B10DE606A5021865 0685 0
    6690A8507E608D002E6 09A20A4
    C75C1AD6D16F0         :REM*108
196 DATA 7BA53848A537482 0B1 0D A
    50B8538A50A8537C637 A9008D7
    2162039C1A918         :REM*1
197 DATA 2045C1AD72162 0CA0D2 0 2
    4C1A5098519A5088518 A5061686
    9088505AD7216         :REM*32
198 DATA 186D6E16CD6D16F002B0 2
    CA888842 0AD70168502 A202A02
    02060C1AD7916         :REM*152
199 DATA 1865 0285 02AD7A1665 03 8
    503204 8C1EE7216AD72 16C907D
    0AE20A90E6885         :REM*223
200 DATA 376885386 0AE6E16CAD0 1
    1F02BAE6E16E8AD6D16 38ED6E1
    6C907901C8A48         :REM*161
201 DATA 20A90E688D6E16CD6F16 B
    0081869 06CD6F16B003 8D6F164
    C210F4CCA0FAD         :REM*73
202 DATA 6F1638ED6E162 0CA0D4C 2
    AC1AD6D16CD6F16D003 4CA60EA
    D6D168D6F1638         :REM*140
203 DATA E906B004D002A9018D6E 1
    64CF20DAD6E16C901D0 034CA60
    EA9018D6E168D         :REM*131
204 DATA 6F164CF20DAD6E16C901 F
    0B4C907 9E038E9068D 6E168D6
    F164C210FAD6D         :REM*156
205 DATA 1638E9078D7216CD6E16 9
    096AD6E161869 06CD72 16B09B8
    D6E168D6F162 0        :REM*122
206 DATA F20DAD05853 003 4C780F 6
    0AD05853045AD6D16F0 402 0B10
    DA96985 720B3         :REM*21
207 DATA C2C900F03320A90E20B1 0
    DA53C38E92485 02A900 8503850
    5A90A8504A202         :REM*7
208 DATA A0042069C1A502186D6E 1
    6CD6D169003AD6D168D 6F162 0A
    90E60AD6D16C9         :REM*190
209 DATA 0894AA9058D7216A96C 8
    506A97B8507AC7216B9 FF0F850
    A38E90F8508A9         :REM*37
210 DATA 0085 0985 0B20B3C2C900 F
    01E202AC1A028A200E8 D0FD88D
    0FA202AC1AD72         :REM*109
211 DATA 160AA8B906104 8B9051 0 4
    860CE72161 0BB60A214 0878A93
    585018E01D4A0         :REM*53
212 DATA 008C05D4A9F98D06D4A9 3
    78D0FD4A90F8D18D4A2 158E04D
    488D0FDCAD0FA         :REM*12
213 DATA A9148D04D4A9308501 28 6
    0BFAF9F8F7F6F720E7A 0EEA0E0
    10FD50EB50E81         :REM*199
214 DATA 9F0FFFDB988888888000 8
    0008008008008008001 9888888
    8BC00BF00BE3C         :REM*168
215 DATA BE3C81C08081988888888 B
    2008C00B362B36281C0 81C19FF
    FFFFFBC008C00         :REM*219
216 DATA B360B3608 1C083E19888 8
    888B2008DC0BE6EBE6E 81C087F
    198888888BDC0         :REM*91
217 DATA 8360B066B0DB6681C08F F
    9988888888360836 0B0 3CB03C8
    1C081C19FFFFF         :REM*173
218 DATA FF8360 81C0 81C08080 81 C
    081C19888888881C080 3C81C08
    1C08FF881C198         :REM*42
219 DATA 8888888070803687F083 E
    087F081C19888888880 18803C8
    3E087F083E081         :REM*244
220 DATA C19FFFFFFF8018AB803 0 8
    1C081C081C081C19888 88888 01
    8803080801C0          :REM*9
221 DATA 0801C1988888888000 8
    0008008008008008001 9F0FFF2
    00181139C110B         :REM*84 ►
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222 DATA 09ØBCB11Ø1Ø946ØØ8113 9
    C11ØBØ9ØB6112120346 1C11Ø1Ø
    F46ØØ2411ØØØØ       :REM*236
223 DATA Ø61Ø7A11Ø5FF82FE8ØØ4 Ø
    Ø82Ø38Ø04ØØB8Ø383ØØ ØC6ØØØØ
    383ØØØC6ØØØØ3       :REM*222
224 DATA 878CDE7C79FB878CCC76 C
    DC38CCCCC66CD838CCC CC66CD8
    39FECCC66CD83        :REM*51
225 DATA 986DCC66CD839867C766 7
    9838ØØ4ØØ82Ø38ØØ4ØØ 81Ø3Ø6F
    F817FØ5FFØCØ1        :REM*173
226 DATA A9ØØ8D1D854CBFC28113 9
    C11ØBØ9ØBE412Ø1Ø946 ØØ81139
    C11ØBØ9ØB3813        :REM*2Ø2
227 DATA Ø1Ø946ØØA9238533A97D 8
    5342Ø14153Ø11A9ØØ85 36A9468
    535A9ØØ8538A9        :REM*129
228 DATA FA85376ØA9ØØ8536A98C 8
    535A9Ø18538A9F48537 6ØØD2Ø2
    Ø1847656F536C        :REM*187
229 DATA 696465731B2Ø69732Ø61 6
    E2Ø617Ø7Ø6C69636174 696F6E2
    Ø7768696368ØD        :REM*224
23Ø DATA 77696C6C2Ø616C6C6F77 2
    Ø796F752Ø746F2Ø7669 6577207
    374616E646172        :REM*184
231 DATA 642Ø616E64ØD636F6D7Ø 7
    2657373656420184 4F444C4
    5211B2Ø616E64        :REM*2Ø5
232 DATA 2Ø184B6F616C611BØD66 6
    96C65732Ø66726F6D2Ø 7769746
    8696E2Ø746865        :REM*136
233 DATA 2Ø1847454F531B2Ø656E 7
    669726F6E6D656E742E ØØ18566
    965773A1BØD2Ø        :REM*165
234 DATA 2Ø436C69636B2Ø6D6F75 7
    3652Ø627574746F6E2Ø 746F2Ø6
    765742Ø6E6578        :REM*49
235 DATA 742Ø66696C652EØD1853 6
    C6964653A1BØD2Ø2Ø43 6C69636
    B2Ø6D6F757365        :REM*39
236 DATA 2Ø627574746F6E2Ø746F 2
    Ø766965772Ø6E657874 2Ø66696
    C652EØD2Ø2Ø48        :REM*251
237 DATA 6F6C642Ø6D6F7573652Ø 6
    27574746F6E2Ø746F2Ø 61626F7
    2742Ø73686F77        :REM*126
238 DATA 2EØØØD2Ø2Ø4174 2Ø7468 6
    9732Ø74696D652C2Ø49 2Ø776F7
    56C642Ø6C696B        :REM*15
239 DATA 652Ø746F2Ø7468616E6B Ø
    D1842696C6C2Ø436F6C 656D616
    E1B2Ø666F722Ø        :REM*7Ø
24Ø DATA 6869732Ø68656C7Ø2Ø61 6
    E64ØD73756767657374 696F6E7
    32EØØ2Ø2Ø5365        :REM*239
241 DATA 6E642Ø636F6D6D656E74 7
    32Ø616E642Ø73756767 6573746
    96F6E732Ø746F        :REM*46
242 DATA 3AØDØD182Ø2Ø5265642Ø 5
    3746F726D1B2Ø285175 616E747
    56D2Ø4C696E6B        :REM*159
243 DATA 292C2Ø6F72ØD182Ø2Ø4A 6
    F652Ø4275636B6C6579 ØD2Ø2Ø3
    436342Ø426561        :REM*72
244 DATA 6C652Ø53742EØD2Ø2Ø57 2
    E2Ø5175696E63792C2Ø 4D612E2
    Ø3Ø323136391B        :REM*22
245 DATA ØØADB784DØØEADØ4853Ø Ø
    62Ø0C913B85ØØ32ØCA13 6Ø6Ø297
    FC9619ØØ7C97B        :REM*56
246 DATA BØØ338E92ØAØØ4D9F113 F
    ØØ5881ØF83ØØD98ØAA8 B9F713A
    AB9F6132ØD8C1        :REM*88
247 DATA 6Ø4249515356260A4CØ5 4
    3Ø5E8Ø581Ø5AD89848D 8221A92
    385ØFA98F85ØE        :REM*141
248 DATA A9Ø5851ØA9Ø88511A9ØØ 8
    5168517203BC2A9Ø838 E511FØ1
    C1869Ø248Ø98Ø        :REM*236
249 DATA 8DC4Ø46885Ø2ØAØAØAØA 3
    8E5Ø238E5Ø21869ØF8D BFØ46Ø8
    D842120BDC12Ø        :REM*238
25Ø DATA 14153ØØC2Ø53C2ØØC7ØØ Ø
    Ø3FØ1B85ØØ92Ø53C2ØØ C7ØØØØ7
    FØ2AD89848D83        :REM*15Ø
251 DATA 21AD82212Ø34ØDA9ØØ85 Ø
    FAD842185ØEØAØAØAØA 1865ØE1
    8696D85ØE8D85        :REM*123
252 DATA 21A9ØØ692385ØF8D8621 2
    ØB7C1Ø08A8721ØØ2A6 Ø1A9358
    5Ø1AD17DØ48A9        :REM*166
253 DATA ØØ8D17DØ85Ø286Ø1A9CØ 8
    5162ØØ8C28616A6Ø1A9 3585Ø16
    88D17DØ86Ø12Ø        :REM*221
254 DATA B7C18721ØØ8AØØØ22Ø14 1
    53ØØC2ØA5C1ØØC7ØØØØ 3FØ1B85
    ØØ92ØA5C1ØØC7        :REM*142
255 DATA ØØØØ7EØ2A616FØ25EØØ5 F
    ØØ62Ø9515B85Ø1B2Ø73 15A9158
    5Ø3A92685Ø22Ø        :REM*1Ø
256 DATA 56C2AD1D85C9Ø2FØØ62Ø A
    1C24C6F14AD83212Ø34 ØD6ØADØ
    FCØC9131Ø03A9        :REM*2Ø1
257 DATA ØØ6ØAD13CØ1ØØ2A53F6Ø 8
    1ØB1Ø1Ø3B15ØC1Ø1FØC ØC1Ø2EØ
    EØ1Ø24ØØ21Ø4Ø        :REM*43
258 DATA ØØ185Ø6C65617365 2Ø7Ø 6
    C6163652Ø6469736B2Ø 7769746
    8ØØ18696E746F        :REM*239
259 DATA 2Ø44524956452Ø412E1B Ø
    Ø18696E746F2Ø445249 56452Ø4
    22E1BØØAD8621        :REM*7
26Ø DATA 85ØDAD852185ØCA91585 Ø
    FA95385ØEAD8984C9Ø8 FØØ8A91
    585ØFA96385ØE        :REM*9
261 DATA 6ØA91585Ø3A9AF85Ø28E 8
    121EØØ3DØØ8A9168 5Ø3 A9ØF85Ø
    24C56C2810B1Ø        :REM*211
262 DATA 1ØC115ØB1Ø2ØD71513E1 1
    5Ø1114ØØØ1847656E65 72616C2
    Ø6469736B2Ø65        :REM*26
263 DATA 72726F722E1BØØ184572 7
    26F723A2Ø2ØØØA9242Ø 45C1AD8
    1214A4A4A4A18        :REM*31
264 DATA 693ØC93A3ØØ269Ø62Ø45 C
    1AD8121 29ØF18693ØC9 3A3ØØ26
    9Ø62Ø45C1A91B        :REM*191
265 DATA 4C45C181ØB1Ø1Ø1E16ØB 1
    Ø2Ø3F16Ø1114ØØØ1854 6865726
    52Ø697326Ø696E       :REM*23
266 DATA 737566666963965 6E74 2
    Ø737Ø6163652Ø6F6E1B ØØ18746
    869732Ø646973        :REM*9
267 DATA 6B2Ø666F722Ø74686973 2
    Ø6F7Ø65726174696F6E 2E1BØØ
                         :REM*145
268 DATA -1              :REM*126 ■
```


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DB25	M-M				10 ft.	R10MM	$10.95
DB25	M-F				6 ft.	R6MF	$8.95
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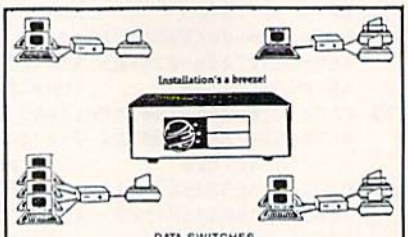

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DB25	AaBb	$39.95	AB	$24.95	ABCD	$34.95
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Day-of-the-Week Calendar

Finding a date is quick and easy with this 100-year calendar program.

By JAMES SCHWARTZ

How often have you fumbled through almanacs looking for a perpetual calendar that shows a past or future year, or needed to know on which day of the week someone was born? Well, no more searching when you use Calendar 64/128, a program that instantly displays any month in any year from 1950 to 2050. Calendar can be used in Direct mode or easily added to your own programs. It's especially helpful with word processing and financial programs, where quick access to a calendar is sometimes needed.

The program comes in the form of a Basic loader. Type in Listing 1 carefully, using *RUN*'s Checksum program to detect any errors you make; then save it to disk, using any filename *except* CAL64/128. When run, Listing 1 asks if you want the C-64 or C-128 version of Calendar, then creates the appropriate machine language code, pokes it into memory and saves it on disk under the filename CAL64/128. Make sure that there's a disk in your drive ready to receive the machine language file.

Finding a Date

To load the C-128 version of Calendar into memory, enter:

```
BLOAD"CAL64/128",B0
```

Then access it with:

```
BANK15:SYS4864,M,Y
```

where M is the month (1–12) and Y is the year (0–99) you want to see. Note that when Y is 0–49, the year displayed will be in the range 2000–2049; when Y is 50–99, the year will be 1950–1999.

To use the C-64 version of Calendar, load it with:

```
LOAD"CAL64/128",8,1
NEW
```

and access it with:

```
POKE180,M:POKE181,Y:SYS49924
```

where M and Y are the desired month and year.

You can scroll through the months with the cursor keys; press cursor-up to increment the calendar (move ahead) and cursor-down to decrement (move back). When you're finished using Calendar, press the space bar to return to your previous screen.

Program Notes

The program displays a white calendar on your current background screen color. You can change the color of the calendar by entering the command POKE4899,C for the C-128 or POKE49955,C for the C-64. C is the color number you want, from 0 to 15.

Both versions of Calendar reside in memory locations generally considered safe from Basic programs. However, if you're using it with other machine language programs, you should be aware of Calendar's locations. The C-128 version resides in 4864–6199, bank 15, and the C-64 version is stored in 49700–51035. Ⓡ

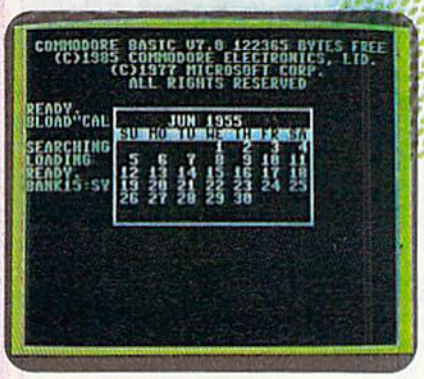
James Schwartz, a computer and electronics technician, enjoys programming on his C-128.

Running Instructions: **Type in Listing 1, save it under some filename *other* than CAL64/128, and run it, indicating at the prompt whether you want the 64 or 128 version. This creates the machine language program, CAL64/128. See the text, above, for loading and accessing instructions.**

Listing 1. Calendar 64/128 program. (Available on ReRUN disk. See page 57.)

```
10 REM "CAL64/128.BAS" BY JAMES
    R. SCHWARTZ          :REM*244
20 PRINT"{SHFT CLR}1....C64":PR
   INT"2...C128":INPUT"WHICH CO
   MPUTER (1 OR 2)";C    :REM*56
30 IFC=1THENSA=4992Ø:GOTO6Ø
                         :REM*14Ø
40 IFC<>2THEN2Ø          :REM*213
50 SA=4864               :REM*178
60 EA=SA+946:PRINT"{CRSR DN}POK
   ING PROGRAM INTO MEMORY..."
                         :REM*138
70 Q=Ø:FORJ=SATOEA:READX:POKEJ,
   X:Q=Q+X:NEXT          :REM*28
80 IFQ<>113622THENPRINT"ERROR I
   N DATA STATEMENTS!":STOP
                         :REM*152
90 DATA133,18Ø,134,181,24,165,1
   8Ø,24Ø,4,2Ø1,13,144,4,169,6,
   133,18Ø,24,166        :REM*Ø
100 DATA181,224,1ØØ,144,4,162,8
    9,134,181,32,153,2Ø,32,15,2
    1,169,1,32,189       :REM*216
110 DATA2Ø,169,112,141,249,4,16
    9,11Ø,141,14,5,169,1Ø9,141,
    97,6,169,125,141     :REM*17
120 DATA118,6,169,64,162,2Ø,157
    ,249,4,157,97,6,2Ø2,2Ø8,247
    ,169,33,133,251      :REM*1Ø7
130 DATA169,5,133,252,169,93,16
    2,8,16Ø,Ø,145,251,16Ø,21,14
    5,251,72,32,62       :REM*2Ø
140 DATA21,1Ø4,2Ø2,2Ø8,24Ø,162,
    Ø,189,1Ø5,22,157,73,5,232,2
    24,22,2Ø8,245,165    :REM*25
150 DATA181,2Ø1,5Ø,144,7,233,5Ø
    ,162,Ø,76,128,19,162,1,133,
    156,134,15Ø,17Ø      :REM*185
160 DATA189,7,22,162,Ø,228,15Ø,
```

RUN it right: **C-64 or C-128 (in 40-Column mode)**

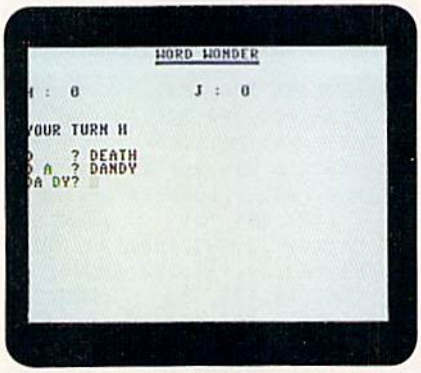


Locating a date is as easy as pressing a cursor key.

```
    24Ø,4,1Ø6,1Ø6,1Ø6,1Ø6,133,1
    78,41,8,133,155      :REM*99
17Ø DATA165,178,41,7,133,254,16
    2,1,228,18Ø,24Ø,13,134,179,
    138,72,32,21Ø,21     :REM*111
18Ø DATA1Ø4,17Ø,232,76,16Ø,19,1
    62,Ø,16Ø,1,196,18Ø,24Ø,7,23
    2,232,232,2ØØ,76     :REM*216
19Ø DATA181,19,16Ø,Ø,189,57,22,
    153,39,5,232,2ØØ,192,3,2Ø8,
    244,169,Ø,133,177    :REM*16
2ØØ DATA24,169,19,1Ø1,15Ø,133,3
    9,32,232,21,169,43,133,251,
    169,5,133,252,32     :REM*247
21Ø DATA86,21,32,121,21,23Ø,251
    ,23Ø,251,165,181,133,39,32,
    232,21,32,86,21      :REM*239
22Ø DATA32,121,21,32,243,2Ø,166
    ,18Ø,134,179,32,184,21,23Ø,
    176,169,1,133,177    :REM*23
23Ø DATA169,114,133,251,169,5,1
    33,252,16Ø,Ø,162,1,228,254,
    24Ø,6,232,2ØØ,2ØØ    :REM*63
24Ø DATA2ØØ,2Ø8,246,162,1,134,3
    9,32,249,21,32,232,21,32,86
    ,21,32,123,21,32     :REM*162
25Ø DATAØ,22,232,228,176,24Ø,23
    ,2ØØ,2ØØ,2ØØ,23Ø,254,165,25
    4,2Ø1,8,2Ø8,223      :REM*181
26Ø DATA169,1,133,254,32,62,21,
    16Ø,Ø,76,35,2Ø,169,Ø,133,2Ø
    8,32,228,255,2Ø1     :REM*97
27Ø DATA145,24Ø,24,2Ø1,17,24Ø,3
    9,2Ø1,32,2Ø8,241,32,229,2Ø,
    32,15,21,32,2Ø9      :REM*175
28Ø DATA2Ø,32,32,21,32,2Ø9,2Ø,9
    6,166,18Ø,232,134,18Ø,224,1
    3,2Ø8,7,162,1,134    :REM*21Ø
29Ø DATA18Ø,32,156,21,76,113,19
    ,166,18Ø,2Ø2,134,18Ø,224,Ø,
    2Ø8,244,162,12       :REM*2Ø8
3ØØ DATA134,18Ø,32,133,21,76,11
    3,19,32,32,21,32,169,2Ø,32,
    15,21,32,169,2Ø      :REM*199
31Ø DATA32,229,2Ø,96,162,1Ø,16Ø
    ,Ø,177,251,145,253,2ØØ,192,
    22,2Ø8,247,32,49     :REM*13
32Ø DATA21,2Ø2,2Ø8,239,96,162,1
    Ø,16Ø,Ø,145,251,2ØØ,192,22,
    2Ø8,249,72,32,62     :REM*2Ø7
33Ø DATA21,1Ø4,2Ø2,2Ø8,239,96,1
    62,1Ø,16Ø,Ø,177,253,145,251
    ,2ØØ,192,22,2Ø8      :REM*131
34Ø DATA247,32,49,21,2Ø2,2Ø8,23
    9,96,169,249,133,251,169,4,
    133,252,169,32       :REM*22
35Ø DATA32,189,2Ø,96,169,113,13
    3,251,169,5,133,252,169,32,
    162,6,16Ø,2Ø,145     :REM*234
36Ø DATA251,136,2Ø8,251,72,32,6
    2,21,1Ø4,2Ø2,2Ø8,241,96,169
    ,249,133,251,169     :REM*94
37Ø DATA216,133,252,169,91,133,
    253,169,23,133,254,96,169,2
    49,133,251,169       :REM*185
38Ø DATA4,133,252,169,127,133,2
    53,169,22,133,254,96,24,165
    ,253,1Ø5,22,133      :REM*23Ø
39Ø DATA253,165,254,1Ø5,Ø,133,2
    54,24,165,251,1Ø5,4Ø,133,25
    1,165,252,1Ø5,Ø      :REM*153
4ØØ DATA133,252,96,248,24,165,2
    53,1Ø5,1,133,253,216,96,165
    ,253,1Ø6,1Ø6,1Ø6     :REM*24Ø
41Ø DATA1Ø6,24,41,15,1Ø5,48,162
    ,Ø,228,177,24Ø,6,2Ø1,48,2Ø8
    ,2,169,32,133,158    :REM*112
42Ø DATA24,165,253,41,15,1Ø5,48
    ,133,159,96,16Ø,Ø,165,158,1
    45,251,2ØØ,165       :REM*132
43Ø DATA159,145,251,96,166,181,
    2Ø2,224,255,2Ø8,2,162,99,13
    4,181,166,156,2Ø2    :REM*73
44Ø DATA224,255,2Ø8,31,162,49,7
    6,176,21,166,181,232,224,1Ø
    Ø,2Ø8,2,162,Ø,134    :REM*41
45Ø DATA181,166,156,232,224,5Ø,
    2Ø8,8,162,Ø,165,15Ø,73,1,13
    3,15Ø,134,156,166    :REM*141
46Ø DATA179,2Ø2,189,93,22,224,1
    ,2Ø8,8,164,155,192,Ø,24Ø,5,
    169,29,133,176       :REM*1Ø
47Ø DATA96,169,28,76,2Ø2,21,32,
    184,21,162,Ø,164,254,2ØØ,19
    2,8,2Ø8,2,16Ø,1      :REM*196
48Ø DATA132,254,232,228,176,2Ø8
    ,242,96,169,Ø,133,253,166,3
    9,224,Ø,24Ø,6,32     :REM*11Ø
49Ø DATA76,21,2Ø2,2Ø8,25Ø,96,13
    3,4Ø,134,41,132,42,96,165,4
    Ø,166,41,164,42      :REM*179
5ØØ DATA96,241,34,59,69,214,119
    ,25,35,18Ø,85,11Ø,113,146,5
    1,76,86,231,17       :REM*229
51Ø DATA42,52,197,1Ø2,127,18,16
    3,68,93,1Ø3,241,34,59,69,21
    4,119,25,35,18Ø      :REM*14Ø
52Ø DATA85,11Ø,113,146,51,76,86
    ,231,17,42,52,197,1Ø2,1Ø,1,
    14,6,5,2,13,1,18     :REM*234
53Ø DATA1,16,18,13,1,25,1Ø,21,1
    4,1Ø,21,12,1,21,7,19,5,16,1
    5,3,2Ø,14,15,22      :REM*128
54Ø DATA4,5,3,31,28,31,3Ø,31,3Ø
    ,31,31,3Ø,31,3Ø,31,245,147,
    149,16Ø,141,143      :REM*2ØØ
55Ø DATA16Ø,148,149,16Ø,151,133
    ,16Ø,148,136,16Ø,134,146,16
    Ø,147,129,246,169    :REM*163
56Ø DATA9,162,169,16Ø,22,32,189
    ,255,169,Ø,17Ø,32,1Ø4,255,1
    69,Ø,162,8,16Ø       :REM*162
57Ø DATAØ,32,186,255,169,Ø,133,
    251,169,19,133,252,169,251,
    162,127,16Ø,22       :REM*4
58Ø DATA32,216,255,96,67,65,76,
    54,52,47,49,5Ø,56,255
                         :REM*79
59Ø IFC=2THENPRINT"SAVING PROGR
    AM TO DISK...":SYS5759:PRIN
    T"DONE!":END         :REM*79
6ØØ PRINT"MODIFYING PROGRAM..."
    :F=Ø:FORI=SATOEA:V=PEEK(I)
                         :REM*38
61Ø IFFTHENF=F+1          :REM*195
62Ø IFF=ØAND(V=32ORV=189ORV=76)
    THENF=1              :REM*47
63Ø IFF=3ANDV>18ANDV<23THENV=V+
    176:POKEI,V:F=Ø:GOTO65Ø
                         :REM*194
64Ø IFF=3THENF=Ø          :REM*175
65Ø NEXT                 :REM*15
66Ø POKE5Ø259,198:POKE5Ø456,36:
    POKE5Ø46Ø,194:POKE5Ø473,127
    :POKE5Ø477,198       :REM*1ØØ
67Ø POKE5Ø844,195:POKE5Ø852,198
    :POKE5Ø82Ø,198:POKE5Ø417,19
    6                    :REM*76
68Ø FORI=5Ø824TO5Ø829:POKEI,234
    :NEXT                :REM*55
69Ø PRINT"SAVING PROGRAM TO DIS
    K...":SYS5Ø815       :REM*2Ø4
7ØØ PRINT"DONE!"          :REM*182
```

Word Wonder

You must be clever to win at this letter-guessing game!



Both children and adults can have fun filling in the Word Wonder blanks.

By JASON SCOTT

If you like playing with words, you'll get a kick out of Word Wonder, a two-player guessing game that's educational for children and just plain fun for adults. It's also easy to learn and to play, and the program is relatively short, so it doesn't take long to type in.

The object of Word Wonder is to guess five-letter words, most of which have no two letters the same. The program displays the first letter of a word, then gives you five tries to correctly guess the other four. In each try, you type five letters and press the return key. The program then jumps down a line and redisplays the letters you got right in the positions in which you placed them. Those in the correct position for the word you're guessing appear in red, and those in the wrong position appear in green. Blanks are left for the letters you haven't guessed yet.

When you guess a word, you earn a point and another turn. When you don't guess it in five tries, the program displays the word and passes control to your opponent. To begin the next turn, press the return key. The first player to reach 20 points wins.

After playing several times, you may start to recognize words. If so, you can change the ones I supplied by replacing them in the Data statements.

See what kind of strategy you can come up with, and E _ J _ _ ! Ⓡ

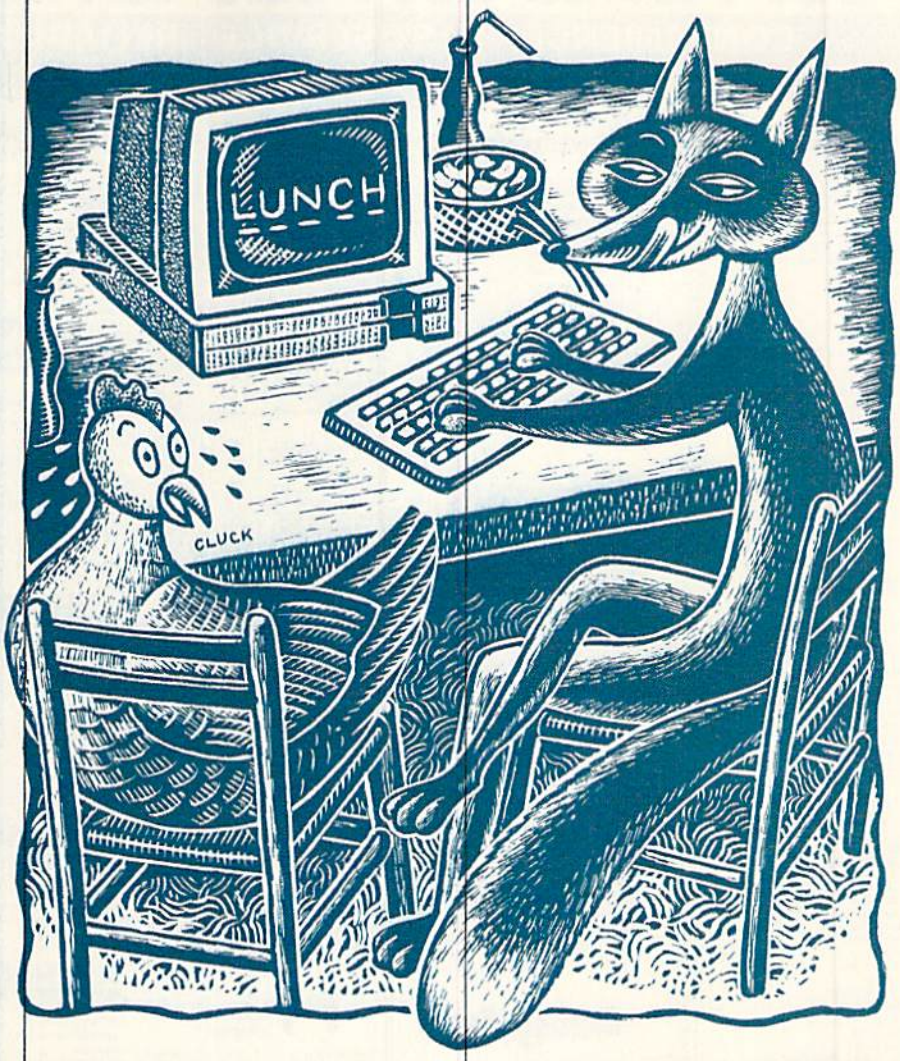
Jason Scott is a 16-year-old high school junior. He has been computing for six years.

Running Instructions: **Type in Listing 1 and save it to disk before running it.**

Listing 1. Word Wonder program. (Available on ReRUN disk. See page 57.)

```
10 DIM AU(200):SC(1)=0:SC(2)=0
                          :REM*45
20 REM *** WORD WONDER ***
                         :REM*178
30 POKE 53280,0:POKE 53281,1
                         :REM*163
40 PRINT"{SHFT CLR}"     :REM*69
50 PRINTTAB(14)"{CTRL 5}WORD WO
   NDER"                 :REM*234
60 PRINTTAB(14)"{11 COMD Us}"
                         :REM*61
70 PRINT"{2 CRSR DNs}{CRSR RT}{
   CTRL 3}NAME OF PLAYER #1";:I
   NPUT N$(1)            :REM*235
80 PRINT"{CRSR DN}{CRSR RT}NAME
    OF PLAYER #2";:INPUT N$(2)
                         :REM*91
90 T=1                   :REM*167
100 PRINT "{CTRL 6}{2 CRSR DNs}
    {4 CRSR RTs}{6 SPACEs}ONE M
    OMENT PLEASE."       :REM*61
110 GOSUB 620            :REM*191
120 Q=INT(RND(0)*200)+1:REM*141
130 IF AU(Q)=1 THEN 120 :REM*86
140 AU(Q)=1              :REM*138
150 W$=RW$(Q)            :REM*35
160 PRINT"{SHFT CLR}"   :REM*189
170 PRINTTAB(14)"{CTRL 5}WORD W
    ONDER"               :REM*99
180 PRINTTAB(14)"{11 COMD Us}"
                         :REM*181
190 PRINT:PRINTN$(1)" : "SC(1)"
    {11 SPACEs}"N$(2)" : "SC(2)
    "                    :REM*0
200 PRINT:PRINT:PRINT"YOUR TURN
     "N$(T)              :REM*76
210 A$=LEFT$(W$,1)       :REM*29
220 B$=MID$(W$,2,1)      :REM*64
230 C$=MID$(W$,3,1)     :REM*116
240 D$=MID$(W$,4,1)     :REM*104
250 E$=MID$(W$,5,1)     :REM*156
260 PRINT"{CRSR DN}{COMD 3}"A$+
    "{4 SPACEs}";        :REM*50
270 FORG=1TO5            :REM*96
280 PRINT"{COMD 3}";     :REM*99
290 INPUT G$             :REM*163
300 L1$=LEFT$(G$,1)      :REM*34
310 L2$=MID$(G$,2,1)    :REM*196
320 L3$=MID$(G$,3,1)    :REM*254
330 L4$=MID$(G$,4,1)    :REM*232
340 L5$=MID$(G$,5,1)     :REM*3
350 REM *** CHECKS ***   :REM*60
360 IF L1$=A$ THEN PRINT "{COMD
     3}"A$;:GOTO390      :REM*155
370 IF L1$=B$ OR L1$=C$ OR L1$=
    D$ OR L1$=E$ THEN PRINT"{CT
    RL 6}"L1$;:GOTO 390:REM*190
380 PRINT" ";            :REM*108
390 IF L2$=B$ THEN PRINT "{COMD
     3}"B$;:GOTO 420     :REM*88
400 IF L2$=A$ OR L2$=C$ OR L2$=
    D$ OR L2$=E$ THEN PRINT"{CT
    RL 6}"L2$;:GOTO 420 :REM*36
410 PRINT" ";            :REM*130
420 IF L3$=C$ THEN PRINT "{COMD
     3}"C$;:GOTO450      :REM*237
430 IF L3$=A$ OR L3$=B$ OR L3$=
    D$ OR L3$=E$ THEN PRINT"{CT
    RL 6}"L3$;:GOTO 450  :REM*0
```

RUN it right: **C-64 or C-128 (in 40-Column mode)**




```
44Ø PRINT" ";              :REM*16Ø
45Ø IF L4$=D$ THEN PRINT "{COMD
    3}"D$;:GOTO 48Ø        :REM*127
46Ø IF L4$=A$ OR L4$=B$ OR L4$=
    C$ OR L4$=E$ THEN PRINT"{CT
    RL 6}"L4$;:GOTO 48Ø:REM*226
47Ø PRINT" ";              :REM*198
48Ø IF L5$=E$ THEN PRINT "{COMD
    3}"E$;:GOTO51Ø         :REM*62
49Ø IF L5$=A$ OR L5$=B$ OR L5$=
    C$ OR L5$=D$ THEN PRINT"{CT
    RL 6}"L5$;:GOTO 51Ø :REM*93
5ØØ PRINT" ";              :REM*228
51Ø IF L1$=A$ AND L2$=B$ AND L3
    $=C$ AND L4$=D$ AND L5$=E$
    THEN GOTO 58Ø          :REM*54
52Ø NEXT G                 :REM*27
53Ø PRINT:PRINT"SORRY "N$(T)" Y
    OU MISSED":IF T=1 THEN T=2:
    GOTO 55Ø               :REM*93
54Ø IF T=2 THEN T=1:       :REM*2Ø3
55Ø PRINT"{CRSR DN}THE WORD WAS
    : {COMD 7}"W$          :REM*4
56Ø GET A$:IF A$<>CHR$(13) THEN
     56Ø                   :REM*1Ø1
57Ø GOTO 12Ø               :REM*127
58Ø PRINT:PRINT"YOU GOT IT "N$(
    T)                     :REM*31
59Ø SC(T)=SC(T)+1:IF SC(T)=2ØTH
    EN PRINT"{SHFT CLR}{5 CRSR
    DNs}{4 CRSR RTs}YOU WON! "N
    $(T):END               :REM*33
6ØØ GET A$:IF A$<>CHR$(13) THEN
     6ØØ                   :REM*11
61Ø GOTO 12Ø               :REM*167
62Ø DIM RW$(2ØØ)           :REM*1Ø7
63Ø FOR E=1TO2ØØ           :REM*134
64Ø READ RW$(E)            :REM*2Ø5
65Ø NEXT E                 :REM*149
66Ø RETURN                 :REM*33
67Ø DATA TACOS,PLATE,BRIDE,WATE
    R,BREAD,MONEY,FLAKE,BOATS,S
    HOCK,PHONE             :REM*75
68Ø DATA SMILE,SHIRT,PANTS,MOUT
    H,WORDS,THING,KNIFE,CHOIR,W
    OUND,FOUND             :REM*69
69Ø DATA FIXED,INDEX,TRIED,QUIL
    T,WROTE                :REM*142
7ØØ REM *** 25 WORDS ***:REM*76
71Ø DATA ALIEN,BLAST,STICK,SKIR
    T,BOARD,CODES,MATES,QUIET,Q
    UITE,PUCKS             :REM*28
72Ø DATA TORCH,MATCH,RADIO,CLOT
    H,RACES,ROSES,BLACK,HOLDS,H
    ANDS,WORLD             :REM*226
73Ø DATA BRIEF,TIGER,CHEST,MAGI
    C,GLARE,WITCH,FROWN,TOUCH,W
    AGON,STORE             :REM*1Ø2
74Ø DATA SWORE,LIGHT,MIGHT,MONT
    H,MOVIE,FILMS,STAND,WATCH,R
    OLES,NAMES             :REM*2ØØ
75Ø REM *** 65 WORDS ***
                           :REM*134
76Ø DATA ULCER,TABLE,NIGHT,FIGH
    T,CLASH,CRAZY,WOVEN,WOMAN,C
    HASE,CLASP             :REM*245
77Ø DATA CHAMP,CHAIN,THINK,IVOR
    Y,TRIES,TRIBE,TRAIN,PARTY,L
    ARGE,ASKED             :REM*171
78Ø DATA WOULD,PERIL,DAISY,DAIL
    Y,HANDS,DOING,TIMES,GREAT,C
    RUEL,STAND             :REM*9
79Ø DATA DEATH,WHITE,BLACK,SIGH
    T,SPOKE,CHOKE,FOLKS,GIVEN,S
    IEVE,SCOUT             :REM*59
8ØØ DATA ABOUT,SLING,FLING,CLIN
    G,ARMOR,SWORD,FRAME,FLAME,P
    ULSE,PHONY             :REM*224
81Ø DATA PIANO,PASTY,PARTY,DEAL
    S,DRAWN,DRINK,DRIFT,BINGO,C
    REAM,CURLY             :REM*9
82Ø DATA CABIN,CLEAN,CHANT,RAIN
    Y,READY,RELAY,EIGHT,REPAY,C
    RUSH,RELAX             :REM*2Ø3
83Ø DATA TRUCK,CLUCK,CLICK,CLOW
    N,CROWN,DROWN,MOUND,FIRST,T
    HIRD,BURST             :REM*46
84Ø DATA SIXTH,BRAIN,GROPE,GRAP
    E,MIXER,CRANE,ROUGE,SCREW,D
    RAKE,FLIES             :REM*252
85Ø DATA PRIDE,WHILE,WHEAT,CLAI
    M,COINS,CHUMP,CRUMB,FAIRY,F
    LOUR,WEARY             :REM*161
86Ø DATA WAIVE,CHAMP,WAKEN,WAXE
    D,MICRO,LACES,TRACE,BRACE,B
    RAID,VOLTS             :REM*Ø
87Ø DATA STORY,YEARS,VALID,VAIL
    S,VAULT,UNDER,LORDS,RINGS,B
    LITZ,GUIDE             :REM*168
88Ø DATA JOUST,JERKY,WINDS,MEAN
    S,WASTE,THANK,TRAMP,TRADE,T
    RAPS,TRAYS             :REM*2Ø9
89Ø DATA NAILS,PURSE,OTHER,TALE
    S,TAILS                :REM*38
9ØØ REM *** 2ØØ WORDS ***
                           :REM*65
```

■

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THE RAMBOard

Beyond Super

RAMBOard does just what the other copy card on the market does: it adds RAM to your 1541 disk drive. This RAM is used to create a workspace where custom software can work its magic. Copy protection is evolving past the point of nibblers and other software-only solutions. Believe us, card based copiers are the future of archival technology.

So how do you decide between our card and "Brand X"? Don't compare the similarities - compare the differences. Their card is just "out there". You buy it, and that's pretty much it. RAMBOard was designed from the very beginning as an integral component in Maverick™, a complete system of archival tools and products. Their card puts the burden of the work on you. Are you good at soldering? You better be - their card REQUIRES it. On the other hand RAMBOards require NO soldering to install, the only exception being a handful of older 1541C's. That's not all - the other guys say they don't use parameters, but what they really mean is they don't WRITE parameters. The user is required to make special critical "copy adjustments" to copy software. Sounds like creating parameters to us. On the other hand, RAMBOard uses Maverick parameters, designed by experts to instantly and easily copy today's toughest titles. So when the other guys say that their card will copy "everything", that may be true - providing that you can figure out the proper "copy adjustment" settings for everything. Good luck!

The differences go beyond the product itself. Software Support International is the company that began with the award winning Kracker Jax series of archival parameters. Our customer support system has earned industry praise, and we've established a reputation for honesty and integrity. A close look at the track record of the other guys will show just how deep our differences run. So when you're ready to get involved with the future of archival technology, pick RAMBOard - a product you can trust, from a company you can trust.

The RAMBOard
1541/1541C Version: $34.95

NEW **1541 II Version: $44.95**
1571 Version: $49.95

The RAMBOard is an optional Maverick accessory

THE 1750 CLONE

Thanks For The Memory

Most Commodore users are content to use their computers within the constraints placed on them by a limited amount of RAM. But some people want more. More speed. More power. And that means just one thing - more memory.

Power users have long known that the ideal solution to their memory problems is out there in the form of Commodore's incredible 1750 RAM expansion module. Just plug it in and you've got a whopping 512k of onboard RAM - the same amount of memory found on most IBM computers! This is the memory cartridge that all serious Commodore power users want. There's only one problem.

You can't find them.

That's right. These RAM units are almost impossible to buy. We've always specialized in finding solutions to Commodore related problems - here's what we came up with.

First, we bought brand new Commodore 1764 RAM expansion units, the ones with only 256k of RAM onboard. Next, we had Chip Level Design engineer and produce a custom upgrade that takes a 1764 to a full 512k! That's the same half meg of RAM as a regular 1750! Finally, we tested each and every cartridge, and warranteed them to be free from defects.

Now there's nothing to stop you from taking your Commodore 64 or 128 to levels of power and sophistication that the original designers never even dreamed of! If you're using programs like GEOS from Berkeley; the Pocket Series from Digital Soutions; future versions of Maverick from Kracker Jax; Fleet System IV from Professional Software; or the potent PaperClip III from Batteries Included; if you're using ANY of these programs, you won't believe the difference that the extra memory makes!

IMPORTANT NOTES - READ CAREFULLY

*C-64/64c (but NOT C-128/128D) owners MUST buy a heavy-duty power supply to use these units. The power supply is NOT included - it is available from us seperately.

* If you ALREADY own a 1764 RAM cartridge, we can upgrade it for you. Your unit MUST be in perfect working order for us to upgrade it. The turnaround time on upgrades is approx. 2 weeks. It will NOT be necessary for you to purchase a new power supply - the one that came with your 1764 will still work fine.

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ALL NEW

THE 1581 TOOLKIT V2

ALL NEW

If You've Been Waiting For A Sign, This Is It.

Introducing the 1581 Toolkit Version 2, the newest incarnation of the best program you can buy for your 1581 disk drive. How good is it? Well, V1 received 4 1/2 of a possible 5 stars from INFO™ magazine - and V2 is even better. What can it do for you? Picture using your 1581 with a:

- ★ **Fast Disk Copier**
- ★ **Fast File Copier**
- ★ **Byte Pattern Search**
- ★ **Partition Creator**
- ★ **Ultrafast Formatter**
- ★ **Track & Sector Editor**
- ★ **Directory Editor**
- ★ **Error Scanner**
- ★ **Relocatable Fast Loader**
- ★ **File Track & Sector Tracer**

And V2 adds many new or enhanced features, like the fact that both our single drive fast data copier and fast file copier now support the 1764/1750 RAM expansion units for super-fast one pass copies, or like our 64k video RAM support for 128 owners! And remember also that all of our 1581 Toolkit utilities use hyperfast read/write routines and, wherever appropriate, allow full access to partitions.

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ATTENTION C-128 OWNERS
Solderless 64K Video RAM Upgrade

Now that Commodore has released the C-128D with 64K of video RAM, we should be seeing 128 programs address this fantastic new feature soon.

BASIC 8 already has the capability of using all 64K of video RAM. If you own the C-128 in stock condition, you own all 16K of video RAM that Commodore felt was necessary. Using Basic 8 format and the full 64K of video RAM provides you with the ability to scroll through video memory as well as enhanced color resolution.

Up until now, to upgrade the C-128 to 64K of video RAM you would have to first search out the components, then find a competent repair outlet to desolder and install the parts. **What a hassle!**

SOLUTION — We have developed a module that simply plugs in to the mother board of your C-128. **No splattered solder — No heat damage — No hassle.**

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Each Volume of Kracker Jax allows you to make Unprotected versions of around 100 specific popular titles. No special knowledge or tools are required. Each Volume originally sold for $19.95. So if you wanted all 7 Volumes, it would have cost you $139.65. But now, you can buy each Volume for only $9.95 or, for you bargain hunters, you can buy **ALL 7 VOLUMES FOR ONLY $29.95!** That works out to a cost of only **$4.28** each!

We've also cut the price on The Shotgun II, one of the most powerful nibblers ever produced. Originally $14.95, you can now own it for only **$9.95!**

And just because there's a remote chance that it might be your birthday, we'll go one step further: Buy the Kracker Jax Volume 1 -7 package for **$29.95,** and we'll throw in The Shotgun II nibbler **FREE!** Quite a deal, huh? But if you want it, better hurry - supplies are limited. After all, nothing good lasts forever.

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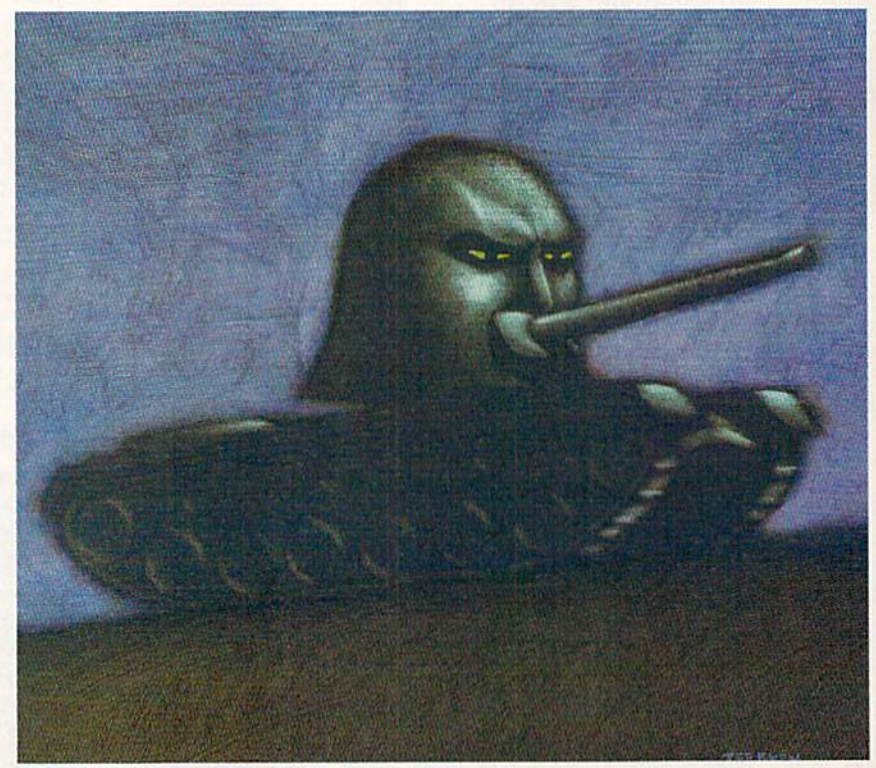

By COLIN ADAMS

The clatter and clank of metal treads will fill your imagination, if not your ears, as you play Gantry, a two-person game depicting an intense tank battle. A C-64, two joysticks and a friend are required to play.

Type in both Listing 1 and Listing 2, using *RUN*'s Checksum to catch errors, and save the listings to disk. Then run Listing 2 to create the machine language program on disk. Once this is done, just load and run Listing 1 when you want to play the game.

The game screen shows two tanks separated by two lines of rubble. Your mission is to shoot through the rubble and reduce your opponent's tank to scrap metal.

Joystick 1 controls the left tank, joystick 2 the right. Using your joystick, move your tank up and down the screen to position it for firing and to dodge incoming shells. Press the firebutton to shoot, with accompanying sound effects.

To destroy the enemy tank, you'll have to bring down some of the rubble, but watch out—each shot will make your tank more vulnerable, too!

Every time a tank is hit, its damage indicator at the top of the screen increases—from none to minor to medium to severe to scrap. When one tank is finally reduced to scrap, the game is over. Ⓡ

Colin Adams, an 11th grade student in Winnipeg, Manitoba, is a self-taught Basic and machine language programmer.

Running Instructions: **Type in both Listing 1 and Listing 2, using *RUN*'s Checksum, and save them to disk. Then run Listing 2 to create the machine language program on disk. Once this is done, just load and run Listing 1 when you want to play the game.**

Listing 1. Boot program. (Available on ReRUN disk. See page 57.)

```
10 IF A=0 THEN A=1:LOAD"GANTRY"
   ,8,1                    :REM*75
20 SYS 49152               :REM*186
```

Listing 2. Machine language creator program. (Available on ReRUN disk. See page 57.)

```
0 REM THIS LISTING #2 CREATES (
  AND SHOULD NOT BE CALLED) GAN
  TRY                      :REM*243
1 REM BY COLIN ADAMS       :REM*102
5 OPEN 8,8,8,"GANTRY,P,W"
                           :REM*72
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                       :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1         :REM*141 ►
```

RUN it right: **C-64; two joysticks**

ILLUSTRATED BY TIM TEEBKEN

ALL NEW

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Why Is This Program America's Favorite Disk Utility System?

All over the country, packs of imitators are running themselves ragged trying to answer that question. They want to know why we're so popular. They want to know what makes Maverick so special. Well, guess what - we're going to tell them.

Maverick is the physical embodiment of a philosphy that has always been the foundation that Kracker Jax products are built on: Work as hard as you can to create the very best product you can. And then improve it. Such is the case with the new Maverick v3.

Maverick is already the most powerful archival system money can buy. So how do you improve on that? By adding exclusive new features like these:

- A new RAM Expansion Unit support module that allows REU owners to enjoy lightning fast response with Maverick's Quick File Copier & Fast Single Data Copier utilities - no more disk swaps!
- 64k video ram support for 128D's or C128's with 64k of video RAM. This provides a memory buffer for enhanced copying capabilities.
- Have you ever lost valuable data to a fatal error on Track 18? Ever done a short "NEW" and then wished you hadn't? Our new Automatic Directory Recovery Utility recreates Track 18 on 1541 formatted disks to recover your files! This does hours of intense, critical recovery work for you *automatically!* Similar to an item on INFO Magazine's March 1989 "Wish List" of dream utilities they'd like to see!
- An all new Advanced Sector Editor with 100% ML coding for blazing speed and superior performance! Full featured - allows editing in ASCII, HEX, and even disassembly modes! Even includes comprehensive on-line help screens!
- And for GEOS™ 2.0 owners with 1581 drives: Maverick v3's GEOS Toolkit has a new utility that allows you to transfer the incredible GEOS v2.0 over to your high speed, high capacity 1581 drive! This transfers *everything* - which means you can run the 64 or the 128 version from the 1581 alone, WITHOUT using the 5 1/4" disks at all! And the 800K 1581 disk leaves you plenty of room to transfer all your GEOS applications over to the same disk! This is a MUST FOR SERIOUS GEOS users who want to unleash the true power of Berkeley Softworks revolutionary operating environment.
- MORE PARAMETERS! Maverick v3 now boasts over 400 parameters that either copy or entirely "break" the potentially destructive protection schemes of some of the world's finest software. Current Maverick owners know how dynamic our parameters have been, but even they will be amazed by the enhancements and additions we've made, including new parameters and special RAMBOard support capabilities exclusive to Maverick v3!
- Enhanced RAMBOard™ Support: Beginning with parameter Module #3, we gave you the ability to copy the Pocket 2.0 series of productivity software. Then Module #4 gave you parameters for 6 V-Max!™ protected titles - parameters that left the competition stunned, because OUR parameters did NOT require physical drive speed modifictions to work. Now Module #5, included with Maverick v3, will forever separate us from the imitators trying in vain to keep up with us. There are over TWENTY new RAMBOard support parameters that are without equal, plus a large number of special parameters that don't require the use of RAMBOard at all! And our new V-MAX! parameters utilize proprietary read/write verification routines that not only eliminate the need to alter drive speeds, but also save you from having to "copy till it boots", a sure sign of an inferior product.

All of these new features are in addition to the amazing array of utilities that have always been found in Maverick. If there's a better value on the market today, we'd like to see it.

One more thing: the next time you think about buying a program, remember that you're also buying a bit of the company that *makes* that program. Will they be there for you in the future? You *know* we will. Because you've made us the most successful Commodore mail order house in the country. ***See our review in INFO's July/Aug '89 Issue!**

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The CSM books are the logical starting place to begin your higher education in copy protection. CSM, the original central clearing house of specialized info for hackers, put their best knowledge into these two books. Volume I provides an overview of copy protection issues and provides you with a foundation of information to begin building on.

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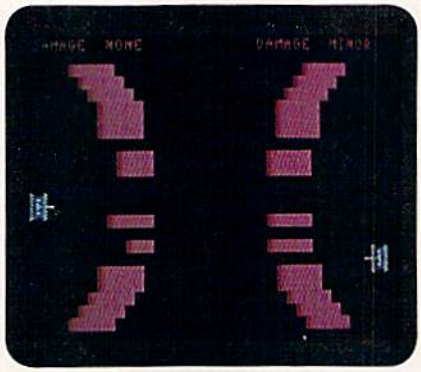
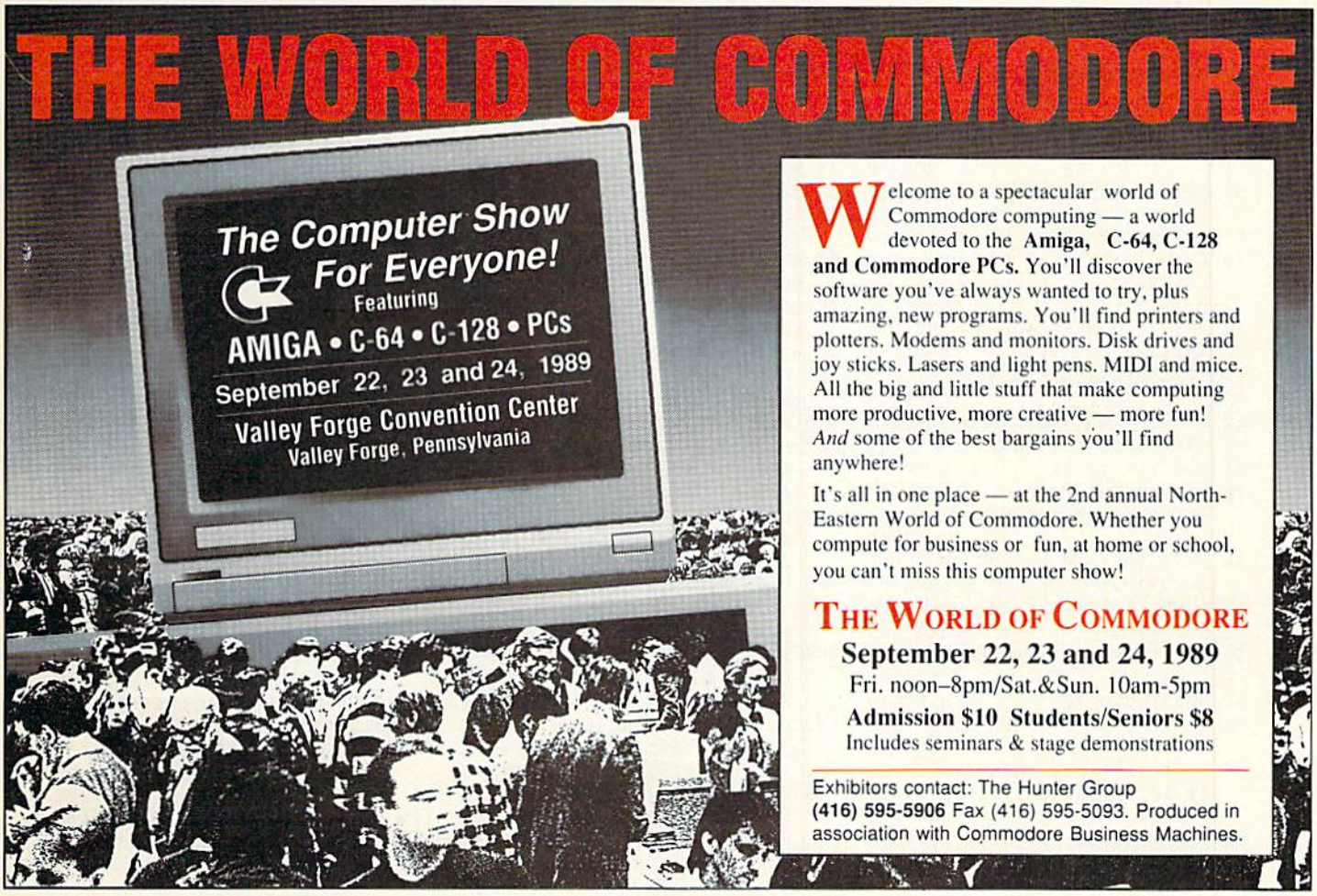
```
15 IF LEN(A$)<62 THEN 55
                        :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,2Ø)   :REM*242
25 FOR I=1 TO 3Ø        :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55            :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55            :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*67
5Ø NEXT:GOTO 1Ø         :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 7Ø                 :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
   A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 7Ø           :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
   Ø)+RIGHT$(A$,LEN(A$)-42)
                        :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55            :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55            :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*148
95 NEXT:GOTO 1Ø         :REM*16Ø
1ØØ REM GANTRY ML       :REM*129
1Ø1 DATA ØØC Ø4CB9C8A9698522A9*C
    885232Ø85CØA9AØAØØ5*9954Ø49
    96DØ4997DØ499       :REM*131
1Ø2 DATA 94Ø499A6Ø499BBØ499CF*Ø
    499E2Ø499F7Ø499ØAØ5*991FØ59
    932Ø59948Ø599       :REM*41
1Ø3 DATA 59Ø5997ØØ59981Ø59998*Ø
    599A9Ø59938Ø6994ØØ6*996ØØ69
    971Ø6998ØØ699       :REM*1Ø3
1Ø4 DATA 99Ø699AFØ699C2Ø699D7*Ø
    699EAØ699FFØ6991Ø7*9926Ø79
    93BØ7994DØ799       :REM*194
1Ø5 DATA 64Ø7997 4Ø7998DØ788FØ*Ø
    34C12CØ6ØAØØØB122FØ*Ø72ØD2F
    FC84C87CØ6ØA9       :REM*2Ø7
1Ø6 DATA Ø98D15DØA91E8DØØDØA9*6
    48DØ1DØA9388D1ØDØA9*3C8DØ6D
    ØA9B48DØ7DØ6Ø       :REM*1ØØ
1Ø7 DATA ADØ1DØC93C9ØØ3CE Ø1DØ*6
    ØADØ1DØC9DCBØØ3EEØ1*DØ6ØEEA
    DC8ADADC8CDAE       :REM*176
1Ø8 DATA C8FØØ16ØA9ØØ8DADC8AD*Ø
    1DCC9FEDØØ62ØB2CØ4C*34C1C9F
    DDØØ72ØBDCØ4C       :REM*211
1Ø9 DATA 34C16ØC9EEDØØ92ØB2CØ*2
    Ø13C14C34C1C9EDDØØ9*2ØBDCØ2
    Ø13C14C34C1C9       :REM*55
11Ø DATA EFDØØ32Ø13C16ØAD15DØ*2
    9Ø2C9Ø2FØ172ØA6C2AD*ØØDØ8DØ
    2DØADØ1DØ8DØ3       :REM*238
111 DATA DØAD15DØØ9Ø28D15DØ6Ø*A
    DF8Ø7C9CØDØØ4EEF8Ø7*6ØCEF8Ø
    76ØADØ7DØC93C       :REM*169
112 DATA 9ØØ3CEØ7DØ6ØADØ7DØC9*D
    CBØØ3EEØ7DØ6ØEEAFC8*ADAFC8C
    DBØC8FØØ16ØA9       :REM*97
113 DATA ØØ8DAFC8ADØØDCC97EDØ*Ø
    62Ø43C14CC4C1C97DDØ*Ø62Ø4EC
    14CC4C1C96EDØ       :REM*15Ø
114 DATA Ø92Ø43C12ØA3C14CC4C1*C
    96DDØØ92Ø4EC12ØA3C1*4CC4C1C
    96FDØØ32ØA3C1       :REM*246
115 DATA 6ØAD15DØ291ØC91ØFØ17*2
    ØCØC2AD15DØØ91Ø8D15*DØADØ6D
    Ø8DØ8DØADØ7DØ       :REM*12
116 DATA 8DØ9DØ6ØADFBØ7C9C2DØ*Ø
    4EEFBØ76ØCEFBØ76ØAD*15DØ29Ø
    2C9Ø2DØ27EEØ2       :REM*222
117 DATA DØEEØ2DØEEØ2DØEEØ2DØ*E
    EØ2DØAD1ØDØ29Ø2C9Ø2*FØ12ADØ
    2DØC9FFDØØ8AD       :REM*112
118 DATA 1ØDØØ9Ø28D1ØDØ4C1DC2*A
    DØ2DØC95Ø9ØF6AD15DØ*29FD8D1
    5DØAD1ØDØ29FD       :REM*11Ø
119 DATA 8D1ØDØAD15DØ291ØC91Ø*D
    Ø27CEØ8DØCEØ8DØCEØ8*DØCEØ8D
    ØCEØ8DØAD1ØDØ       :REM*158
12Ø DATA 291ØC91ØDØ12ADØ8DØC9*Ø
    ØDØØ8AD1ØDØ29EF8D1Ø*DØ4C31E
    AADØ8DØC9ØABØ       :REM*16
121 DATA F6AD15DØ29EF8D15DØAD*1
    ØDØØ91Ø8D1ØDØ4C31EA*78A9D38
    D14Ø3A9C18D15       :REM*122
122 DATA Ø3586ØA9ØØAØ1899ØØD4*8
    8DØFAA91F8D18D46ØA9*A88DØØD
    4A9Ø18DØ1D4A9       :REM*67
123 DATA 998DØ5D4A9C98DØ6D4A9*Ø
    18D17D4A9218DØ4D46Ø*A9168DØ
    7D4A91B8DØ8D4       :REM*45
124 DATA A9Ø98DØCD4A9ØØ8DØBD4*A
    9818DØBD46ØA9168DØE*D4A91B8
    DØFD4A9Ø98D13       :REM*55
125 DATA D4A9ØØ8D12D4A9818D12*D
    46ØA946AØØ3A2Ø98DØ7*D48CØ8D
    48EØCD4A9ØØ8D       :REM*2Ø2
126 DATA ØBD4A9818DØBD46ØA946*A
    ØØ3A2Ø98DØED48CØFD4*8E13D4A
    9ØØ8D12D4A981       :REM*1Ø3
127 DATA 8D12D46ØA9BØAØØ7A2ØA*8
    DØ7D48DØED48CØ8D48C*ØFD48EØ
    CD48E13D4A9ØØ       :REM*153
128 DATA 8DØBD48D12D4A9818DØB*D
    48D12D46ØAD1FDØ8DB5*C829Ø2C
    9Ø2DØ52ADØ3DØ       :REM*1Ø5
129 DATA 2ØEBC385228423AØØØB1*2
    2C9AØFØØ5C8CØ27DØF5*A92Ø912
    2AD1ØDØ29Ø2C9       :REM*66
13Ø DATA Ø2DØØ8AD1ØDØØ9Ø48D1Ø*D
    ØADØ2DØAC Ø3DØ8DØ4DØ*8CØ5DØA
    D15DØ29FDØ9Ø4       :REM*112
131 DATA 8D15DØAD1ØDØ29FD8D1Ø*D
    Ø2ØDAC2A9ØØ8D1FDØ6Ø*ADB5C82
    91ØC91ØDØ4BAD       :REM*3
132 DATA Ø9DØ2ØEBC385228423AØ*2
    7B122C9AØFØØ388DØF7*A92Ø912
    2AD1ØDØ291ØC9       :REM*243
133 DATA 1ØFØØ8AD1ØDØ29DF8D1Ø*D
    ØAEØ8DØAC Ø9DØ8EØADØ*8CØBDØA
    D15DØ29EFØ92Ø       :REM*255
134 DATA 8D15DØAD1ØDØØ91Ø8D1Ø*D
    Ø2ØF4C26ØC93FBØØ5A9*5ØAØØ46
    ØC947BØØ5A978       :REM*53
135 DATA AØØ46ØC94FBØØ5A9AØAØ*Ø
    46ØC957BØØ5A9C8AØØ4*6ØC95FB
    ØØ5A9FØAØØ46Ø       :REM*237
136 DATA C967BØØ5A918AØØ56ØC9*6
    FBØØ5A94ØAØØ56ØC977*BØØ5A96
    8AØØ56ØC97FBØ       :REM*24
137 DATA Ø5A99ØAØØ56ØC99FBØØ5*A
    93ØAØØ66ØC9A7BØØ5A9*58AØØ66
    ØC9AFBØØ5A98Ø       :REM*47
138 DATA AØØ66ØC9B7BØØ5A9A8AØ*Ø
    66ØC9BFBØØ5A9DØAØØ6*6ØC9C7B
    ØØ5A9F8AØØ66Ø       :REM*37
139 DATA C9CFBØØ5A92ØAØØ76ØC9*D
    7BØØ5A948AØØ76ØA97Ø*AØØ76ØA
    D15DØ29Ø4C9Ø4       :REM*4Ø
14Ø DATA FØØ16ØEEB1C8ADB1C8CD*B
    2C8DØ1FEEFAØ7ADFAØ7*C9C8DØ1
    5A9C58DFAØ7AD       :REM*17Ø
141 DATA 15DØ29FB8D15DØAD1ØDØ*2
    9FB8D1ØDØ6ØAD15DØ29*2ØC92ØF
    ØØ16ØEEB3C8AD       :REM*227
142 DATA B3C8CDB4C8DØ1FEEFDØ7*A
    DFDØ7C9C8DØ15A9C58D*FDØ7AD1
    5DØ29DF8D15DØ       :REM*6
143 DATA AD1ØDØØ92Ø8D1ØDØ6ØAD*B
    6C8C911DØ4BAD15DØ29*ECØ92Ø8
    D15DØAEØØDØAC       :REM*13
144 DATA Ø1DØ8EØADØ8CØBDØ2ØØE*C
    3AD1ØDØ29DFØ91Ø8D1Ø*DØEEB7C
    8ADB7C82ØØFC6       :REM*21
145 DATA A2ØØAØØ9182ØFØFF2Ø85*C
    Ø2ØAØC5A9388D1ØDØAD*B7C8C9Ø
    4DØ5F68684C3F       :REM*225
146 DATA C6ADB6C8C9ØADØ53AD15*D
    Ø29E5Ø9Ø48D15DØAD1Ø*DØØ9Ø48
    D1ØDØAEØ6DØAC       :REM*172
147 DATA Ø7DØ8EØ4DØ8CØ5DØ2ØØE*C
    3AD1ØDØØ9Ø429FD8D1Ø*DØEEB8C
    8ADB8C82ØØFC6       :REM*248
148 DATA A2ØØAØ21182ØFØFF2Ø85*C
    Ø2ØD8C5A9388D1ØDØAD*B8C8C9Ø
    4DØØ568684C3F       :REM*41
149 DATA C66ØA2642Ø5EC6A9C68D*F
    DØ72Ø5EC6A9C78DFDØ7*2Ø5EC62
    Ø5EC62Ø5EC6AD       :REM*125
15Ø DATA 15DØ29DFØ9Ø18D15DØAD*1
    ØDØØ91Ø8D1ØDØA9C48D*FDØ7A9Ø
    Ø8D1EDØ6ØA264       :REM*128
151 DATA 2Ø5EC6EEFAØ7ADFAØ7C9*C
    7DØF1A2FF2Ø5EC62Ø5E*C62Ø5EC
    6AD15DØ29FBØ9       :REM*93
```



Your opponent is waiting for you to make one wrong move—then, boom!

```
152 DATA Ø88D15DØAD1ØDØ29F88D*1
    ØDØA9C48DFAØ7A9ØØ8D*1EDØ6ØC
    9Ø1DØØ9A99185        :REM*89
153 DATA 22A9C885236ØC9Ø2DØØ9*A
    9988522A9C885236ØC9*Ø3DØØ9A
    99F8522A9C885        :REM*232
154 DATA 236ØA9A68522A9C88523*6
    ØA9ØØ8D15DØ8DB7C88D*B8C8A2Ø
    Ø2Ø5EC62Ø5EC6        :REM*131
155 DATA 2Ø5EC62Ø5EC62Ø5EC64C*Ø
    DC9AØØØ88EAEADØFBCA*DØF66ØØ
    ØØØØØØØØØØ7Ø        :REM*13Ø
156 DATA Ø7ØØD82DØØ7AA7ØØDAAD*Ø
    Ø7967ØØDAADØØ79A7ØØ*D96DØØ7
    95554D96DØØ79        :REM*6
157 DATA A7ØØDAADØØ7967ØØDAAD*Ø
    Ø7AA7ØØD82DØØ7ØØ7ØØ*ØØØØØØØ
    ØØØØØØØØØØØØ        :REM*2Ø6
158 DATA ØØØØØØDØØDØØ7827ØØDA*A
    DØØ7AA7ØØD96DØØ7AA7*ØØD9ADØ
    Ø7967ØØD95554        :REM*51
159 DATA 7967ØØD9ADØØ7AA7ØØD9*6
    DØØ7AA7ØØDAADØØ7827*ØØDØØDØ
    ØØØØØØØØØØØØ        :REM*242
16Ø DATA ØØØØØØØØØØØØØØØØDØØ7*Ø
    Ø782DØØDAA7ØØ7AADØØ*D967ØØ7
    AADØØDA67ØØ79        :REM*76
161 DATA 6D155567ØØ796DØØDA67*Ø
    Ø7AADØØD967ØØ7AADØØ*DAA7ØØ7
    82DØØDØØ7ØØØØ       :REM*4
162 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØ7ØØDØØD827ØØ7AAD*ØØDAA7Ø
    Ø796DØØDAA7ØØ        :REM*248
163 DATA 7A6DØØD96715556DØØD9*6
    7ØØ7A6DØØDAA7ØØ796D*ØØDAA7Ø
    Ø7AADØØD827ØØ        :REM*113
164 DATA 7ØØDØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ        :REM*154
165 DATA ØØØØØØØØØØØØØØØØØØØ*A
    AØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ        :REM*237
166 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØA
    ØØØØ258ØØØ158        :REM*253
167 DATA ØØØ158ØØØ26AØØØ996ØØ*Ø
    9568ØØA5A4ØØ2994ØØ1*AA8ØØ16
    6ØØØ196ØØØØ96        :REM*26
168 DATA ØØØØ98ØØØØA8ØØØØ2ØØØ*Ø
    ØØØØØØØØØØØØØØØ98ØØ*Ø258ØØØ
    A56ØØØ9558ØØ2        :REM*83
169 DATA 568Ø2A5AØØ26A9ØØ26A6*Ø
    Ø95958ØA655A829569A*A996559
    5A5966565A6A5        :REM*212
17Ø DATA 95AA159688Ø6A68ØØA66*Ø
    ØØ258ØØØ258ØØØØAØØØ*14ØØØØØ
    ØØØ98ØØØ5ØØØ        :REM*131
171 DATA ØØ9AØØØØ98ØØØØ2ØØØ26*Ø
    ØØØ14ØØØØ2428ØØØ895*Ø8ØØ962
    6Ø81616261824        :REM*5Ø
172 DATA 15ØØØ826Ø98ØØ8258ØØØ*Ø
    94ØØ282ØØØ26ØØØØØ8Ø*ØØØØØØØ
    ØØØ931C2Ø4441        :REM*64
173 DATA 4D4147453A2Ø4E4F4E45*2
    Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø*2Ø2Ø444
    14D4147453A2Ø        :REM*18
174 DATA 4E4F4E45ØØ4D494E4F52*2
    ØØØ4D454449554DØØ53*4556455
    245ØØ53435241        :REM*92
175 DATA 5Ø2ØØØØØ96ØØ96ØØFFØØ*F
    FØØØØØØØØA9ØØ8D21DØ*8D2ØDØA
    8B969C699ØØ3Ø        :REM*24Ø
176 DATA C8DØF7B969C799ØØ31C8*D
    ØF7A9CØ8DF8Ø7A9C48D*F9Ø7A9C
    58DFAØ7A9C28D        :REM*138
177 DATA FBØ7A9C48DFCØ7A9C58D*F
    DØ7A9ØC8D25DØA9ØB8D*26DØA9F
    F8D1CDØA9Ø6AØ        :REM*63
178 DATA ØØ9927DØC8CØØ89ØF82Ø*Ø
    3CØ2Ø93CØ2Ø6AC22Ø77*C22Ø87C
    22ØC8CØ2Ø59C1        :REM*71
179 DATA 2Ø37C32Ø96C32Ø89C42Ø*B
    EC4AD1EDØ8DB6C82ØF3*C44C1CC
    96Ø2Ø                :REM*177
18Ø DATA -1              :REM*38
```

■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Quikmat

No more cups of coffee while formatting disks; with this utility, you won't even make it to the kitchen.

By STACEY HUGHES

Let's face it: Formatting a disk the usual way wastes time. Why not use Quikmat? This C-64 utility lets you format a disk on your 1541 drive in about 15 seconds, markedly faster than the normal 90- to 120-second time.

Quikmat is a machine language program that's written in the form of a Basic loader. Type in the loader (Listing 1) using *RUN*'s Checksum program to ensure accuracy. Then save it to disk before running it, using a filename other than Quikmat; the loader will give that name to the machine language program it creates on disk. To create the machine language program, just load Listing 1 and run it.

When you're ready to use Quikmat, enter LOAD"QUIKMAT",8 and RUN. Then, following the screen instructions, insert the disk to be formatted in the drive, enter the name and ID number you want it to have and press return. In about one-sixth of the usual time, you'll have a newly formatted disk, enabling you to move on to more important things. Ⓡ

Stacey Hughes, an electronics technician in the U.S. Navy, is a self-taught programmer who is proficient in Basic, machine language and Turbo Pascal.

Running Instructions: **Type in and save Listing 1, giving it some filename *other* than Quikmat. Then run it to create the machine language program, Quikmat, which you then load and run when you need to use it.**

Listing 1. Quikmat creator program. (Available on ReRUN disk. See page 57.)

```
Ø REM THIS LISTING CREATES (AND
   SHOULD NOT BE CALLED) QUIKMA
  T                          :REM*Ø
5 OPEN 8,8,8,"QUIKMAT,P,W"
                             :REM*86
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                         :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1           :REM*141
15 IF LEN(A$)<62 THEN 55
                             :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,2Ø)        :REM*242
25 FOR I=1 TO 3Ø             :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                             :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                 :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                 :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                             :REM*67
5Ø NEXT:GOTO 1Ø              :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 7Ø                      :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
   A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 7Ø                :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
   Ø)+RIGHT$(A$,LEN(A$)-42)
                             :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                             :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                 :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                 :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                             :REM*148
95 NEXT:GOTO 1Ø              :REM*16Ø
1ØØ REM QUIKMAT ML           :REM*Ø
1Ø1 DATA Ø1Ø816Ø8ØAØØ9E2Ø2832*3
   Ø3732292Ø5155494B4D*4154ØØØ
   ØØØA9932ØD2FF             :REM*232
1Ø2 DATA A9ØB8D2ØDØA9ØØ8D21DØ*A
   Ø1ØA2Ø12ØFØFFA264A9*ØC2ØFØØ
   BAØØ6A217182Ø             :REM*193
1Ø3 DATA FØFFA2B2A9ØC2ØFØØBAØ*Ø
   6A2Ø8182ØFØFFA2CFA9*ØC2ØFØØ
   BA252AØØ5A9ØF             :REM*217
1Ø4 DATA 2ØØ1ØCAØØØB9ØØØ2993B*Ø
   BC8CØ1ØDØF5A2DBA9ØC*2ØFØØBA
   2AØAØØ5A9Ø22Ø             :REM*94
1Ø5 DATA Ø1ØCADØ1Ø248ADØØØ248*A
   9932ØD2FFAØØ2A2ØA18*2ØFØFFA
   2EDA9ØC2ØFØØB             :REM*2Ø6
1Ø6 DATA 2ØE4FFC985DØØ34C18Ø8*C
   9ØDDØF2A9932ØD2FFAØ*ØØA2ØA1
   82ØFØFFA214A9             :REM*237
1Ø7 DATA ØD2ØFØØB2ØØ3Ø9A9Ø82Ø*B
   1FFA96F2Ø93FFAØØØB9*FBØ82ØA
   8FFC8CØØ6DØF5             :REM*38
1Ø8 DATA 682ØA8FF682ØA8FF2ØAE*F
   F2Ø56ØBA9ØØ85A1A5A1*C9Ø3DØF
   A2ØCCFFAØØØA9             :REM*236
1Ø9 DATA AØ993BØBC8CØ1ØDØF84C*1
   8Ø84D2D5712ØØØ2ØØØØ*A96BA2Ø
   985Ø386Ø4A9ØØ             :REM*122
11Ø DATA A2Ø585Ø586Ø6A5BA2ØØC*E
   DA96F2ØB9EDA94D2ØDD*EDA92D2
   ØDDEDA9572ØDD             :REM*158
111 DATA EDA5Ø52ØDDEDA5Ø62ØDD*E
   DA91E2ØDDEDAØØØB1Ø3*2ØDDEDC
   8CØ1E9ØF62ØFE             :REM*152
112 DATA ED18A5Ø3691E85Ø39ØØ3*E
   6Ø418A5Ø5A6Ø6691E85*Ø59ØØ2E
   6Ø6EØØ69ØADC9             :REM*226
113 DATA E29ØA96ØA9Ø18522A9ØA*8
   5BA78ADØØ1CØ9Ø48DØØ*1CA9148
   54A2Ø4CØ5C64A             :REM*68
114 DATA DØF9A2ØØ2Ø59Ø52Ø76Ø5*A
   9EE8DØC1C2ØA1Ø5ADØØ*1C29FB8
   DØØ1CA9EC2ØAC             :REM*183
115 DATA Ø6EA6ØAØØ2AEØØ1CE82Ø*5
   9Ø588DØF6E6224C76Ø5*AØØ2AEØ
   Ø1CCA2Ø59Ø588             :REM*25
116 DATA DØF66Ø8A29Ø385BBADØØ*1
   C29FCØ5BB8DØØ1CA9Ø4*85BBA2Ø
   ØCADØFDC6BBDØ             :REM*225
117 DATA F96ØA5222Ø4BF28AØAØA*Ø
   AØAØA8544ADØØ1C299F*Ø5448DØ ►
```

RUN it right: **C-64; 1541 disk drive**

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Circle 187 on Reader Service card.

```
    Ø1C6ØADØC1C29       :REM*219
118 DATA 1FØ9CØ8DØC1CA9FF8DØ3*1
    C8DØ11C6ØA5222Ø4BF2*8543Ø8
    EØ5A9FF8DØ11C       :REM*1Ø9
119 DATA A9ØØ85BCAAA8A53999ØØ*Ø
    3A5BC99Ø2Ø3A5229Ø3*Ø3A5139
    9Ø4Ø3A5129Ø5        :REM*239
12Ø DATA Ø3A9ØF99Ø6Ø399Ø7Ø3A9*Ø
    Ø59Ø2Ø359Ø3Ø359Ø4Ø3*59Ø5Ø39
    9Ø1Ø3189869ØØ      :REM*11
121 DATA A8E6BCA5BCC5439ØC198*4
    8E88A9DØØØ4E8DØFAA9*4B8DØØØ
    4A9Ø385312Ø3Ø       :REM*228
122 DATA FE68A8882ØE5FD2Ø2F5FD*A
    9Ø485312ØE9F5853A2Ø*8FF7A9Ø
    Ø8532A9FF8DØ1       :REM*12Ø
123 DATA 1CA2Ø55ØFEB8CADØFAA2*Ø
    AA4325ØFEB8B9ØØØ38D*Ø11CC8C
    ADØF38432A2Ø8       :REM*192
124 DATA 5ØFEB8A9558DØ11CCADØ*F
    5A9FFA2Ø55ØFEB88DØ1*1CCADØF
    7A2BB5ØFEB8BD       :REM*1Ø3
125 DATA ØØØ18DØ11CE8DØF4AØØØ*5
    ØFEB8B13Ø8DØ11CC8DØ*F5A955A
    2Ø85ØFEB88DØ1       :REM*168
126 DATA 1CCADØF7C6BCDØ9A5ØFE*B
    85ØFEB82ØØØFEA522C9*23FØØ62
    Ø3BØ54CA1Ø56Ø       :REM*6Ø
127 DATA 2ØØEØ54C23Ø52ØØEØ54C*8
    5Ø58DØC1C58AØØØB9DØ*Ø699ØØØ
    2C8CØ1ØDØF5A9       :REM*237
128 DATA 128D74Ø22Ø4ØEE6ØØØØØ*Ø
    ØØØØØØØØØØØØØØØAØAØ*AØAØAØA
    ØAØAØAØAØAØAØ       :REM*29
129 DATA AØAØAØAØØØØØØØØØØØØ*Ø
    ØØØ2ØØ3Ø92ØE7FFA9Ø8*2ØB1FFA
    96F2Ø93FFAØØØ       :REM*241
13Ø DATA B983ØB2ØA8FFC8CØØ5DØ*F
    52ØAEFFA9ØF2ØC3FF6Ø*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*172
131 DATA 4D2D45ØØ5ØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*8
132 DATA ØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*4Ø
133 DATA ØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*43
134 DATA ØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØ86*Ø385Ø4A
    ØØØB1Ø3FØØ62Ø       :REM*173
135 DATA D2FFC8DØF66Ø86Ø384Ø4*8
    D3BØCAØØØ84FBA9AØ99*ØØØ2C8C
    Ø1ØDØF8A9AØA4       :REM*2Ø4
136 DATA FB91Ø32ØE4FFA4FBC9ØD*F
    Ø3AC914FØ26C985DØØ3*4CE2FC1
    8C92Ø9ØE718C9       :REM*139
137 DATA 6ØBØE2CØØFFØDE99ØØØ2*1
    8C94Ø9ØØ2E94Ø91Ø3E6*FB4C16Ø
    CCØØØFØC9A92Ø       :REM*212
138 DATA 91Ø399ØØØ2C6FB4C16ØC*A
    92Ø91Ø36Ø9E5155494B*4D4154Ø
    DØD2Ø2Ø2Ø2Ø2Ø       :REM*114
139 DATA 2Ø2Ø2Ø2Ø2Ø9A42592Ø53*5
    4414345592Ø452E2Ø48*5547484
    553ØDØD2Ø2Ø2Ø       :REM*225
14Ø DATA 2Ø2843292Ø434F5Ø5952*4
    9474854Ø2Ø313938392Ø*52554E2
    Ø4D4147415A49       :REM*91
141 DATA 4E45ØØ2D5Ø524553532Ø*9
    E46312Ø9A544F2Ø4558*4954Ø2Ø5
    155494B4D4154       :REM*128
142 DATA 2DØØ4449534B2Ø4E414D*4
    52Ø3AØØØDØD2Ø2Ø2Ø2Ø*2Ø2Ø444
    9534B2Ø49442Ø       :REM*173
143 DATA 3AØØ494E534552542Ø44*4
    9534B2Ø544F2Ø464F52*4D41542
    C2Ø5Ø52455353       :REM*224
144 DATA 2Ø9E52455455524E9A2E*Ø
    Ø2Ø2Ø2Ø2Ø2Ø464F524D*4154544
    94E4720444953       :REM*16Ø
145 DATA 4B2C2Ø5Ø4C4541534520*5
    74149542E2Ø2Ø2Ø2Ø2Ø*ØØ
                        :REM*1Ø5
146 DATA -1             :REM*Ø
```

■

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Match Games

Adult or child, you'll have a real challenge matching these complex patterns.

By LEONARD MORRIS

Match Games is a series of nine colorful pattern-matching games for one or two players. In One-Player mode, you race against a timer to make 25 pattern matches; in Two-Player mode, you race against your opponent. Each game, played with joysticks, features a different type of pattern and offers three difficulty levels. Easy-listening music complements the graphics.

The program in Listing 1 is written entirely in Basic. Use *RUN*'s Checksum program when typing it in to catch any errors you make, and be sure to save the program to disk before running it.

How To Play

When playing Match Games alone, plug your joystick into port 2; when playing an opponent, players 1 and 2 use ports 1 and 2, respectively.

The program starts by asking how many players there will be, their names and the difficulty level desired. Then it displays a menu of the nine games. After you make your choice, a patterned background is drawn, followed by a game board with the first of 25 patterns to be matched on the right and an array of 25 possible matches on the left. Within the array, there appears a large square cursor for each player.

To make a match, use the joystick to move your cursor to the pattern in the array that you think matches the pattern on the right, then press the fire-button. If you're right, a beep will sound and another pattern will appear on the right; if you're wrong, a buzzer will sound and you can try again. There's no penalty for a mistake except losing time. It helps to focus on only one area of each pattern, rather than the whole thing.

In a one-person game, the timer is initially set at three minutes. When you better that, your time becomes the one to beat. In other words, the better you get, the better you must become. The timer and the time to beat are always displayed at the bottom of the screen. The game is over when time runs out or you've matched all 25 patterns.

The two-player game has no time limit; the only object is to make matches faster than your opponent. The game is over when the 25 matches have been made. Note that when two are playing, the cursors are distinguished by brightness; if they aren't sufficiently different, adjust the brightness control on your monitor.

At the end of play, the menu reappears so you can select another game. You can also change the number of players and difficulty level at this time.

The Choices

The nine Match Games and the types of patterns they feature are:

1. **Shapies**—these are black geometrical shapes within lighter geometrical shapes.
2. **Colors**—blocks composed of three bands, each of a different color chosen from a field of eight.
3. **Letters**—three-by-three blocks composed of the letters T, U, V, W and X.
4. **Numbers**—three-by-three blocks composed of the numbers 4, 5, 6, 7 and 8.
5. **Pointer**—three-by-three blocks of horizontal and vertical arrows. I find this game the hardest.
6. **Diangie**—blocks filled with diagonal lines criss-crossing each other.
7. **Perpend**—blocks filled with horizontal and vertical lines, some intersecting, others passing over and under each other.
8. **Curlies**—blocks filled with curvy lines.
9. **Rectang**—blocks filled with small rectangles of various sizes.

The three difficulty levels are:

Easy—where all but the Colors patterns appear in white against a black background, providing good contrast, and where patterns disappear from the array as they're used, to reduce confusing clutter.

Hard—where all but the Colors patterns appear in the screen border color against a patterned background, and where patterns remain in the array after being used. In Colors, the colors in each block are chosen from five, not eight, possibilities, so they're less easily distinguished.

Extra-hard—like Hard, except the pattern to be matched keeps flashing in various colors.

Don't start playing Match Games unless you have plenty of time. You're sure to get hooked into trying each one. R

Leonard Morris is an electronics technician and free-lance C-128 programmer.

Running Instructions: **Type in Listing 1, save it to disk and run it.**

Listing 1. Match Games program. (Available on ReRUN disk. See page 57.)

```
1 REM ************************
  *******                 :REM*44
2 REM **{5 SPACEs}MATCH{2 SPACE
  s}GAMES{2 SPACEs}BY{7 SPACEs}
  **                      :REM*214
3 REM ** (C) 1989{2 SPACEs}LEON
  ARD MORRIS{3 SPACEs}**:REM*84
4 REM **{6 SPACEs}2547 ANDORRA
  DR.{6 SPACEs}**         :REM*16Ø
5 REM **{4 SPACEs}HEPHZIBAH,GA.
  3Ø815{6 SPACEs}**       :REM*35
6 REM ************************
  *******                 :REM*41
7 FAST:DIMN$(11),TP$(25),TR$(25►
```

RUN it right: **C-128 (in 40-Column mode); joystick**

```
),T$(25),U$(25),Q(25),T(25):F
ORT=1TO8:READJX(T),JY(T):NEXT
:POKE2592,1:I=4864:POKE5122,Ø
:II=49176:DG=5:XT=16Ø:YT=1ØØ
                        :REM*68
8 FORT=1TO9:DT$(T)="Ø3:ØØ.ØØ":R
EADSL$(T):NEXT          :REM*16
9 REM ** DATA{2 SPACEs}FOR{2 SP
ACEs}SCREEN{2 SPACEs}DISPLAY{
2 SPACEs}AND MUSIC ** :REM*69
1Ø FORT=5TO9:READCH$(T):NEXT
                        :REM*61
11 FORT=ØTO5:READMC$(T):NEXT:FO
RT=1TO3:READNC$(T):NEXT:CO$=
"23456789"              :REM*13Ø
12 DATA Ø,-1,1,-1,1,Ø,1,1,Ø,1,-
1,1,-1,Ø,1,-1           :REM*19
13 DATA* SHAPIES *,* COLOURS *,
* LETTERS *,* NUMBERS *,* PO
INTER *,* DIANGIE *,* PERPEN
D *,* CURLIES *,* RECTANG *
                        :REM*141
14 DATA"{2 LEFT ARROWs}{3 UP AR
ROWs}","{2 SHFT Ns}{SHFT V}{
2 SHFT Ms}","{COMD Q}{COMD W
}{COMD E}{COMD R}{SHFT +}","
{SHFT I}{SHFT K}{SHFT J}{2 S
HFT Us}","{COMD O}{COMD I}{C
OMD U}{COMD K}{COMD L}"
                        :REM*155
15 DATA V2O2T4U8V1O4T5V3O3T8,V2
O2TØV1O4T2V3O3T5,V2O5TØV1O4T
1V3O2T4                 :REM*15Ø
16 DATA V2O5TØV1O4T9V3O2T8,V2O5
TØV1O2T6V3O3TØ,V2O4T1V1O4T7V
3O2T6                   :REM*222
17 DATA V1T5V2TØV3T8U8,V1T6V21V
3T7U8,V1T1V2T5V3T6U8 :REM*93
18 COLOR4,1:COLORØ,1:COLOR1,1:G
RAPHIC1,1:CHAR1,Ø,Ø,"MATCH":
CHAR1,Ø,1,"GAMES":DL$=CHR$(2
7)+"D"                  :REM*222
19 GRAPHICØ,1:P=1224:CJ$="{CTRL
 2}{CTRL 8}{COMD 6}{CTRL 6}{
CTRL 4}{COMD 7}{CTRL 7}{CTRL
 5}{CTRL 3}{COMD 3}{COMD 1}{
COMD 2}"                :REM*2ØØ
2Ø FORJ=P-4ØTOP-1:POKEJ,1ØØ:BL$
=BL$+" ":LT$=LT$+"{COMD @}":
NEXT:FORT=5TO2Ø:SYSII,Ø,T,Ø:
CJ=CJ+1+(CJ=12)*12:PRINTMID$
(CJ$,CJ,1)LT$;:NEXT:SLOW
                        :REM*164
21 FORX=ØTO39:FORY=ØTO15
                        :REM*2Ø4
22 LOCATEX,Y:Z=P+X+4Ø*Y:IFRDOT(
2)=1THENPOKEZ,232:ELSEPOKEZ,
1ØØ                     :REM*32
23 NEXTY,X:SLOW         :REM*68
24 YG$(1)="**************":YG$(2
)="* YOUR GAME *":YG$(3)="*
SELECTION *":YG$(4)=YG$(1)
                        :REM*194
25 REM **{2 SPACEs}MUSIC STRING
S **                    :REM*141
26 M$(1)="V1HAV2QAQCV1HGV3IAIBI
AIB"                    :REM*115
27 M$(2)="V1HDV2QBQDV1HFV3IAICI
EIG"                    :REM*216
28 M$(3)="V1HDV2QEQFV1HFV3ICIDI
EIG"                    :REM*121
29 M$(4)="V1HAV2IEQFIDV1HFV3ICI
DIEIG"                  :REM*27
3Ø N$(Ø)="V1O2HGHFHEHDQCQGQAQBH
C"                      :REM*17
31 P1$="V1O2HGV2O4I":P2$="AQCIB
V1O2HF"                 :REM*25Ø
32 Q1$="HEV2O4QCV1O2HDQC":Q2$="
5HDV1O2QGQAQBHC"        :REM*14Ø
33 P3$="V3O5WCV1O2HEV2O4QCV1O2H
DQCV2O":Q3$="1O2QBHC"
                        :REM*162
34 P4$="DQFIEV1O4HFV3O5WCV1O3":
P5$="EV2O5QCV1O3"       :REM*235
35 Q4$="V1O4IGSFIESGV2O4I":Q5$=
"QCV2O5I"               :REM*123
36 P6$="DV3O5QDQF":P7$="V1O2QGQ
AV3O5QGQDV"             :REM*87
37 P8$="V2O5QE":P9$="V1O3QGQAV3
O6QGQDV2O5IDV1O4QBHC":REM*97
38 V1$=P1$+P2$+Q1$:V2$=P1$+P2$+
P3$:V3$=P1$+P4$         :REM*188
39 V4$=P6$+P7$:V5$=Q5$+P6$+P8$+
P9$:V6$=P6$+P8$+P7$     :REM*21
4Ø N$(1)=V1$+"QGQAQBHC":N$(2)=V
1$+"V2O"+Q2$            :REM*129
41 N$(3)=V2$+Q2$:N$(4)=V2$+"5H"
+V4$+Q3$                :REM*212
42 N$(5)=V2$+"6I"+V6$+"2O5IDV"+
Q3$                     :REM*32
43 N$(6)=V3$+"H"+P5$+"HD"+V5$:N
$(7)=V3$+"W"+P5$+V5$:REM*148
44 N$(8)=N$(6):N$(9)=N$(5):N$(1
Ø)=Q4$+P4$+"Q"+P5$+"HE"+V5$
                        :REM*241
45 REM *** SET VARIABLES ***
                        :REM*155
46 COLOR1,2:A=-1:X=19:Y=15:C=1:
Z1=7:X1=18:Y1=14:D=1:S=-1:W=
3584:CO=8               :REM*148
47 FORT=ØTO5Ø:READD$:POKET+I,DE
C(D$):NEXT:SYS4891      :REM*238
48 REM **{3 SPACEs}SPRITE MAKER
{2 SPACEs}**            :REM*234
49 FORT=ØTO2Ø:FORU=ØTO2:V=W+U+T
*3:IFT>15THENX4=Ø:ELSEIFU=2T
HENX4=24Ø:ELSEX4=255 :REM*73
5Ø POKEV,X4:NEXTU,T:SPRSAV1,2:S
PRITE1,Ø,12,1,1,1:SPRITE2,Ø,
16,1,1,1:GRAPHIC1,1:GOSUB67
                        :REM*99
51 REM ** PLAYERS AND TYPE OF G
AME **                  :REM*12
52 SLOW:GRAPHICØ:COLORØ,1:COLOR
4,1:WINDOWØ,Ø,39,24:SYS49176
,Ø,21,1:PRINTDL$"{5 SPACEs}{
CTRL 9}{CTRL 8} NUMBER OF PL
AYERS (1 OR 2)":GETKEYY$:NP=
VAL(Y$):IFNP<1ORNP>2THEN52
                        :REM*134
53 IFNP=2THENFORT=1TO2:PRINTDL$
"NAME OF PLAYER #"T;:INPUTNP
$(T):NEXT               :REM*98
54 SYS49176,Ø,21,Ø:PRINT"{CTRL
 2}LEVEL: ({CTRL 9} E{CTRL Ø}
ASY, {CTRL 9} H{CTRL Ø}ARD O
R {CTRL 9} X{CTRL Ø}TRA HARD
)":GETKEYY$:TG=INSTR("EHX",Y
$):IFTGTHEN55:ELSE54 :REM*23
55 TG=TG-1              :REM*48
56 TH=TG:GOTO78         :REM*19Ø
57 REM ** LETTER & NUMBER GENER
ATOR **                 :REM*2Ø5
58 K2=INT(RND(1)*K1)+K3:CH$(G)=
"":FORQ=ØTO4:CH$(G)=CH$(G)+C
HR$(K2+Q):NEXT:RETURN
                        :REM*143
59 CHAR1,Ø,23,BL$,1:RETURN:REM
** CLEAR BOTTOM LINE **
                        :REM*136
6Ø CO=CO+1+(CO=16)*16:COLOR4,CO
:SOUND1,999*CO,1:RETURN:REM
** CHANGE COLOR OF SCREEN **
                        :REM*19
61 REM ** MAKE CHARACTERS FOR G
AME SELECTED **         :REM*181
62 IFG=3THENK1=21:K3=65:ELSEIFG
=4THENK1=6:K3=48:ELSE64
                        :REM*Ø
63 GOSUB58              :REM*223
64 FORT=ØTO24:IFG=2THENGOSUB7Ø:
NEXT:RETURN             :REM*Ø
65 T$(T)="":FORU=1TO9:T$(T)=T$(
T)+MID$(CH$(G),INT(RND(1)*5)
+1,1):NEXT:NEXT:RETURN
                        :REM*175
66 REM ** MAKE SHAPES FOR SHAPI
ES GAME **              :REM*43
67 FAST:G=1:Z2=2:GOSUB94:Z2=72:
GOSUB94:Z2=9Ø:GOSUB94:X1=2Ø:
Y1=15:Z2=12Ø:GOSUB94:GOSUB94
                        :REM*23
68 FORT=ØTO24:TP$(T)=T$(T):NEXT
:RETURN                 :REM*251
69 REM ** SELECT COLORS FOR BLO
CKS **                  :REM*43
7Ø IFTH=2THENRN=5:ELSERN=8
                        :REM*236
71 GG=Ø:FORV=ØTO2:C$(V)=MID$(CO
$,INT(RND(1)*RN)+1,1):NEXT
                        :REM*174
72 IFC$(Ø)=C$(1)ORC$(1)=C$(2)OR
C$(2)=C$(Ø)THEN71       :REM*236
73 U$(T)=C$(Ø)+C$(1)+C$(2):IFT<
1THEN76                 :REM*89
74 FORE=T-1TOØSTEP-1:IFU$(E)<>U
$(T)THENNEXT:GOTO76     :REM*52
75 GOTO71               :REM*212
76 T$(T)=U$(T):RETURN   :REM*1Ø2
77 REM ** START SELECTED GAME *
*                       :REM*153
78 SLOW:TG=Ø:COLOR1,2:GRAPHIC1:
GOSUB142:FAST:IFG>1THENGOSUB
62:GOTO82               :REM*159
79 REM ** RANDOMIZE AND DISPLAY
 SHAPES **              :REM*157
8Ø FORT=ØTO24:T$(T)=TP$(T):NEXT
:FORT=ØTO24:FORQ=1TO2:REM*56
81 S(Q)=INT(RND(1)*25):NEXT:A$=
T$(S(1)):T$(S(1))=T$(S(2)):T
$(S(2))=A$:NEXT         :REM*246
82 SLOW:GOSUB149:PL=1:COLOR1,2:
FORT=ØTO24:X=INT(T/5):Y=T-X*
5:SOUND1,999,1:GOSUB128
                        :REM*216
83 NEXT:TG=TH:PL=2:GOTO96
                        :REM*165
```

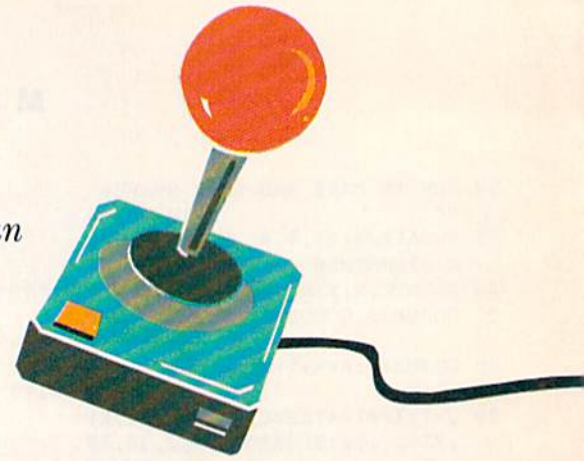
```
84 REM ** MAKE AND SAVE SHAPES
   **                        :REM*186
85 SSHAPET$(T),Ø,Ø,39,31:GRAPHI
   C1,1:RETURN               :REM*222
86 PAINTC,X,Y:RETURN         :REM*155
87 GOSUB88:GOSUB91:RETURN
                             :REM*47
88 GOSUB6Ø:A=A+1:IFA=5THENA1=A1
   +1:A=Ø                    :REM*194
89 C=1:IFA1<4THENCIRCLEC,X,Y,X1
   ,Y1,,,,Z2:ELSEBOX1,4,2,36,29
   ,,1                       :REM*8
9Ø GOSUB86:RETURN            :REM*162
91 C=Ø:IFA<4THENCIRCLEC,X,Y,8,6
   ,,,,Z3:GOTO93             :REM*11Ø
92 BOXØ,13,12,26,2Ø,,1       :REM*1Ø5
93 GOSUB86:T=A+A1*5:GOSUB85:RET
   URN                       :REM*2ØØ
94 Z3=2:GOSUB87:Z3=72:GOSUB87:Z
   3=9Ø:GOSUB87:Z3=12Ø:GOSUB87:
   GOSUB87:RETURN            :REM*248
95 REM ** GAME BEGINS **
                             :REM*199
96 GOSUB59:GOSUB162:CHAR1,7,23,
   " PRESS ANY KEY TO START GAM
   E ",1:GOSUB155:GOSUB59:GG=1
                             :REM*2
97 CHAR1,31,5,"{UP ARROW} {UP A
   RROW} {UP ARROW}":CHAR1,29,7
   ,"FIND THIS":CHAR1,3Ø,8,"PAT
   TERN"                     :REM*57
98 REM ** SET SPRITES AND TIME
   **                        :REM*1Ø6
99 IFG=2THENS1=5:ELSES1=Ø
                             :REM*155
1ØØ IFG>2THENS2=9:ELSES2=1
                             :REM*192
1Ø1 MOVSPR2,24,5Ø:MOVSPR1,185+S
   2,179-S1:POKE53269,2-(NP=2)
                             :REM*126
1Ø2 XJ(1)=4:YJ(1)=4:XJ(2)=Ø:YJ(
   2)=Ø:GOSUB123             :REM*121
1Ø3 X1(1)=4:Y1(1)=4:X1(2)=Ø:X1(
   2)=Ø:GOSUB125             :REM*2Ø2
1Ø4 TI$="ØØØØØØ":IFNP=1THENCOLO
   R1,16:CHAR1,2Ø,23," BEST TI
   ME= "+DT$(G),1            :REM*172
1Ø5 IFTG=2ANDG<>2THENPOKE5122,1
                             :REM*53
1Ø6 REM ** PLAYER MOVEMENT **
                             :REM*9
1Ø7 GOSUB117:IFNP=2THENJ3=2+(J3
   =2):ELSEJ3=2              :REM*27
1Ø8 J=JOY(J3):IFJ=ØTHEN1Ø7:ELSE
   IFJ>127THEN114            :REM*2Ø7
1Ø9 XJ(J3)=XJ(J3)+JX(J):IFXJ(J3
   )<ØORXJ(J3)>4THENXJ(J3)=X1(
   J3)                       :REM*24
11Ø YJ(J3)=YJ(J3)+JY(J):IFYJ(J3
   )<ØORYJ(J3)>4THENYJ(J3)=Y1(
   J3)                       :REM*141
111 MOVSPRJ3,24+XJ(J3)*4Ø,5Ø+YJ
   (J3)*32:X1(J3)=XJ(J3):Y1(J3
   )=YJ(J3):SOUNDJ3,4ØØ,1
                             :REM*182
112 GOTO1Ø7                  :REM*197
113 REM ** IS IT A MATCH **
                             :REM*23
114 X=XJ(J3):Y=YJ(J3):IFT$(X+Y*
   5)=T$(T(NX))THENSC(J3)=SC(J
   3)+1:COLOR1,G+2:GOSUB128:SO
   UND1,8ØØØ,1:GOSUB123:ELSESO
   UND2,4ØØ,1Ø:GOTO1Ø7:REM*181
115 SL=SL+1:IFSL=25THEN138:ELSE
   GOSUB125:GOTO1Ø7          :REM*172
116 REM ** TIME DISPLAY FOR ONE
    PLAYER GAME **           :REM*57
117 IFNP=2THENRETURN:ELSEBT$(G)
   =MID$(TI$,3,2)+":"+RIGHT$(T
   I$,2)+"."+RIGHT$(STR$(TI),2
   )+" ":COLOR1,12:CHAR1,1,23,
   "TIME= "+BT$(G),1         :REM*93
118 REM ** TIMING ROUTINE FOR E
   ND GAME **                :REM*149
119 IFTI$>"ØØ"+LEFT$(DT$(G),2)+
   MID$(DT$(G),4,2)THEN121
                             :REM*235
12Ø RETURN                   :REM*7
121 COLOR1,15:CHAR1,1,24,"YOU H
   AVE USED UP ALL YOUR TIME..
   .SORRY":FORT=1TO3:SOUNDT,4Ø
   Ø,6Ø:SLEEP1:NEXT:GOTO138
                             :REM*34
122 REM ** SCORE FOR TWO PLAYER
    GAME **                  :REM*72
123 IFNP=1THENRETURN:ELSECOLOR1
   ,12:CHAR1,2,23," "+NP$(1)+"
    "+STR$(SC(1))+" ",1:COLOR1
   ,16:CHAR1,21,23," "+NP$(2)+
   " "+STR$(SC(2))+" ",1:RETUR
   N                         :REM*168
124 REM ** SELECT NEXT PATTERN{
   2 SPACEs}**               :REM*255
125 NX=NX+1:IFG=2THEN126:ELSEIF
   G>1THEN127:ELSECOLOR1,2:GSH
   APET$(T(NX)),248,Ø:RETURN
                             :REM*55
126 FORE=ØTO2:COLOR1,VAL(MID$(T
   $(T(NX)),E+1,1)):CHAR1,32,E
   ,"{3 SPACEs}",1:NEXT:RETURN
                             :REM*111
127 FORE=ØTO2:COLOR1,2:CHAR1,32
   ,E,MID$(T$(T(NX)),E*3+1,3):
   NEXT:RETURN               :REM*6
128 IFTGTHENRETURN:ELSEIFPL=2TH
   ENGOSUB137:RETURN:ELSEIFG=2
   THEN133                   :REM*181
129 IFTHTHENCOLOR1,G+2       :REM*61
13Ø IFPL=1THENGOSUB136       :REM*145
131 IFG=1THENGSHAPET$(X+Y*5),4Ø
   *X,32*Y:RETURN            :REM*179
132 FORE=ØTO2:CHAR1,1+X*5,Y*4+E
   ,MID$(T$(X+Y*5),E*3+1,3):NE
   XT:RETURN                 :REM*39
133 IFPL=1THENGOSUB136       :REM*15Ø
134 FORE=ØTO2:COLOR1,VAL(MID$(T
   $(X+Y*5),E+1,1))          :REM*183
135 CHAR1,1+X*5,Y*4+E,"{3 SPACE
   s}",1:NEXT:RETURN         :REM*3Ø
136 SSHAPETR$(X+Y*5),4Ø*X,32*Y,
   39+4Ø*X,31+32*Y:RETURN
                             :REM*88
137 GSHAPETR$(X+Y*5),4Ø*X,32*Y:
   RETURN                    :REM*3
138 S=S-1:SL=Ø:SC(1)=Ø:SC(2)=Ø:
   GL=Ø                      :REM*138
139 REM ** GET BEST TIME **
                             :REM*1Ø7
14Ø IFNP=1ANDBT$(G)<DT$(G)THEND
   T$(G)=BT$(G)              :REM*149
141 GOSUB165:GOTO78          :REM*129
142 POKE5122,Ø:POKE512Ø,Ø:SYSI:
   POKE53269,Ø               :REM*36
143 COLOR1,2:FORT=1TO4:CHAR1,26
   ,T-1,YG$(T),1:NEXT:COLOR1,1
   3:CHAR1,26,4,"{COMD *}":CHA
   R1,27,4,"{11 SPACEs}",1:CHA
   R1,38,4,"{SHFT LB.}"
                             :REM*17Ø
144 REM ** DISPLAY TITLE OF GAM
   ES **                     :REM*76
145 FORT=1TO9:COLOR1,2+T:CHAR1,
   26,3+T*2,STR$(T)+" ":CHAR1,
   28,3+T*2,SL$(T),1:CHAR1,28,
   4+T*2,"{SHFT M}{9 COMD @s}{
   SHFT N}":NEXT             :REM*178
146 COLOR1,2:CHAR1,Ø,22," * ",1
   :CHAR1,3,22,"-CHANGE LEVEL/
   PLAYERS"                  :REM*47
147 GOSUB155:G=VAL(Y$):IFY$="*"
   THEN52:ELSEIFG<1THEN145
                             :REM*1Ø7
148 GRAPHIC1,1:RETURN        :REM*149
149 COLOR4,2+G:GRAPHIC1,1:COLOR
   1,G+2:AG=-(AG=Ø)          :REM*144
15Ø GM=INT(RND(1)*8)+3:GA=INT(R
   ND(1)*36Ø):FORT=1TO36:ONAG+
   1GOTO151,152              :REM*6
151 GA=ABS(GA+DG)            :REM*21Ø
152 CIRCLE1,XT,YT,T*7,T*5,,,GA,
   36Ø/GM:NEXT               :REM*13Ø
153 COLOR1,G+2:CHAR1,27,11,SL$(
   G),1:RETURN               :REM*181
154 REM ** MUSIC ROUTINE **
                             :REM*247
155 TD=Ø:M1=Ø:TC=Ø:NC=1:LY=2+(L
   Y=2):ONLYGOTO158,156
                             :REM*12Ø
156 M1=M1+1+(M1=96)*96:MC=INT((
   M1-1)/16):TC=TC+1+(TC=4)*4:
   PLAYMC$(MC)+M$(TC)        :REM*248
157 GETY$:IFY$=""THEN156:ELSERE
   TURN                      :REM*95
158 TD=TD+1:IFTD=23THENTD=1:NC=
   NC+1+(NC=3)*3             :REM*228
159 TE=INT((TD-1)/2):PLAYNC$(NC
   )+N$(TE)                  :REM*133
16Ø GETY$:IFY$=""THEN158:ELSERE
   TURN                      :REM*19Ø
161 REM ** RAMDOM BY ORDER **
                             :REM*98
162 FAST:FORT=ØTO24          :REM*178
163 R=INT(RND(1)*25):IFQ(R)=STH
   EN163                     :REM*188
164 Q(R)=S:T(T)=R:NEXT:NX=-1:SL
   OW:RETURN                 :REM*194
165 GETY$:IFGL<11THENGL=GL+1:GO
   TO165:ELSERETURN          :REM*86
166 DATA AD,ØØ,14,A2,ØØ,AØ,Ø5,9
   D,1F,1C,9D,47,1C,9D,6F,1C,9
   D,97,1C,E8,88,DØ          :REM*75
167 DATA FØ,EE,ØØ,14,6Ø,78,A9,2
   8,8D,14,Ø3,A9,13,8D,15,Ø3,5
   8,6Ø,AD,Ø2,14,FØ          :REM*42
168 DATA Ø3,2Ø,ØØ,13,4C,65,FA
                             :REM*155
```

■

GAMES GALLERY

Why travel to Las Vegas or Atlantic City when you can entertain Lady Luck on your C-64?

By BOB GUERRA



I WAS HAVING A BAD NIGHT. First, I lost 200 dollars at the blackjack table. Another 75 bucks fell into an ungrateful one-armed bandit. Then, five quick hands at the poker machine knocked me down a cool 25. With 300 dollars blown and 200 left, I knew my luck had to change; I could feel it. Walking up to the roulette table, I casually dropped the whole stack on number 29.

"Thirty-five to one. . .let's see, that'll be 7000 smackers. . .," I calculated as the wheel spun. Unfortunately, before I could figure out how I would spend my winnings, the wheel stopped, the ball rolled into number six, and my chips were swept from the table quicker than I could say "double or nothing."

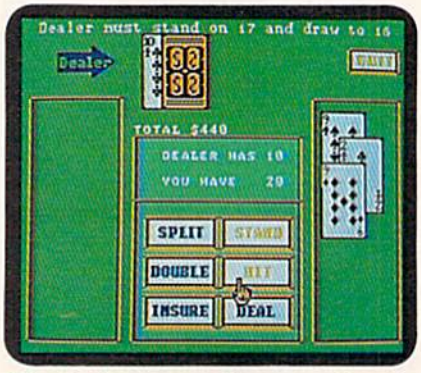
Luckily, this costly experience didn't happen in Las Vegas or Atlantic City. I blew the 500 dollars in my private casino, with the help of my C-64 and some gambling software. Whether your game is poker, keno, blackjack, roulette, the slots or craps, there's a gambling simulation available that'll let you put Lady Luck to the test.

VEGAS GAMBLER; VEGAS CRAPS

Racing, flight and combat simulation programs give you the chance to experience something you might otherwise never get to try. Software like Vegas Gambler lets you do the same by betting big money on the luck of the cards or the spin of a wheel.

You begin Vegas Gambler with 500 dollars to take to your choice of the slots, poker machine, blackjack table or roulette wheel. The object is to parlay this initial stake into a small fortune, which can be saved to disk for future gaming sessions.

Each gambling area in the game features authentic graphics and a convenient joystick interface that lets you place bets without ever touching the keyboard. When playing the slot machine or poker, a hand-shaped cursor takes chips from your stack and deposits them into the machine. On subsequent turns, repeating the previous bet is simply done by clicking on the handle or pressing the Deal button.

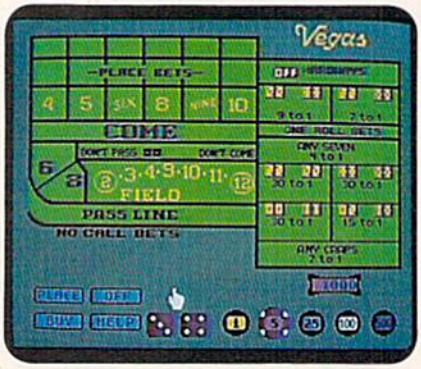


What betting system will you use to beat the dealer in Vegas Gambler?

At the roulette table, you encounter all of the same betting options you'd find in a real Vegas casino. There are more than 12 types of bets, including six for even-money—any odd, even, red, black, high or low number—and several bets with payoffs up to 35-to-1.

If you've never set foot in a casino and don't know a straight from a full house, a little time with the user's manual can teach you everything you need to know to play Vegas Gambler.

One gambling game that isn't included on the Vegas Gambler disk is craps. However, the same manufacturer publishes an excellent simulation for fans of that dice game. Vegas Craps starts you off with a substantial stake ($1000) and, like Vegas Gambler, it lets you control all of the action with your joystick.



Place your bets in Vegas Craps and hope Lady Luck is on your side.

The hand-shaped cursor is used to place bets (by dragging chips around the craps table) and to toss the animated dice across the table. By highlighting Help in the lower left-hand corner and pointing to a betting area on the table, you can display a window that contains specific information about your bet: how you win and lose, when the bet can be placed, the maximum wager and the payoff. Although covered in the user's manual, the on-screen help lets you quickly review your options before placing a bet.

TRUMP CASTLE: THE ULTIMATE CASINO GAMBLING SIMULATION

With a name like The Ultimate Casino Gambling Simulation (based on the Trump Castle Hotel and Casino in Atlantic City), you'd think it has to be the best gambling simulation you can buy, right? Well, although Ultimate Casino does have a few advantages over Vegas Gambler, a side-by-side comparison shows Vegas Gambler as the clear winner.

Ultimate Casino includes the four Vegas Gambler games, plus craps and a keno simulation. In addition, it lets you choose your own betting limits for craps, roulette, keno and blackjack. Your bankroll is automatically saved to disk when you quit, and it's loaded again when you reboot.

Ultimate Casino lets you place bets using a joystick; however, several options are available only through keyboard commands. Control/O, for instance, displays odds and payoffs, and Control/R lists the last 20 results for craps or roulette. While these are both useful options, I would have preferred point-and-click accessibility.

The real problem with Ultimate Casino is that its graphics, animation and sound effects often leave much to be desired. For example, although there are nine slot machines to choose from, including both three- and five-wheel ►

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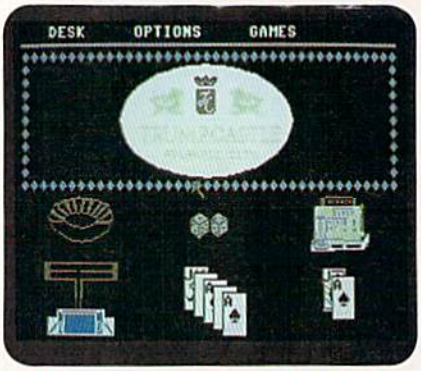


Will it be craps, roulette, keno, blackjack, poker or the slots in Trump Castle?

slots and machines with accumulating jackpots, none of them look like the real thing.

In addition, even though the user's manual describes craps as a "fast-action" game, each roll of the dice takes approximately six seconds.

Although complaining about the visual appearance of a game which otherwise functions just fine might sound like nit-picking, authentic graphics can go a long way toward making a simulation more believable and more fun. To be fair, the game's designers did do a good job on the graphics and animation for the roulette wheel. Unfortunately, Ultimate Casino's graphics, on the whole, are far from ultimate.

Black Jack Academy

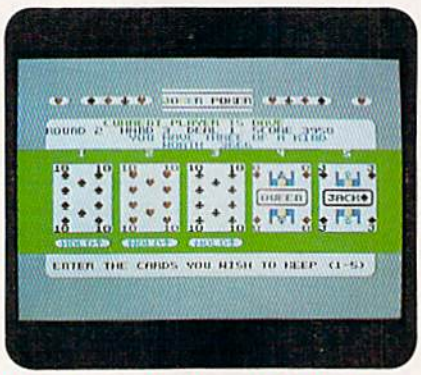
For the casual blackjack player, both Vegas Gambler and The Ultimate Casino Gambling Simulation offer acceptable blackjack simulations that let you split pairs, double-down or place insurance bets. For serious blackjack players, however, the only real choice is Blackjack Academy. This superb simulation lets up to five gambling buddies play blackjack under a variety of options: you can vary the number of decks used in the game, adjust the minimum and maximum bets, and play under any of five different rules.

To help beginners learn the game of blackjack and develop a winning strategy, Blackjack Academy offers extensive help screens, covering topics from when to hit and stand to card-counting methods. Like Ultimate Casino, Blackjack Academy's graphics aren't exactly breathtaking, but its options and ease of use make it a winner.

Aussie Joker Poker

Another gambling simulation that allows multi-player participation is Aussie Joker Poker. You'll find that this game is similar to conventional poker except that it's played in rounds, usually of five hands each. During each hand, as long as you continue to improve, you can discard and draw new cards as many times as you like. Points are awarded according to Hoyle's Poker hand values. At the end of a round, the winning player is the one with the highest total for the five hands.

This unusual betting system will probably make Joker Poker seem a little strange at first, but ultimately the game is exciting for a number of reasons. First of all, the possibility of busting on each draw if you fail to improve your hand adds to the importance and suspense of each decision. In addition, because the game is often played with more than one deck and using only the cards seven through ace (high), your chances of getting a straight, full house, three-of-a-kind or even a royal flush are greatly improved.



Hold those tens for three-of-a-kind in Aussie Joker Poker.

Card Sharks

Finally, if you're convinced that the hottest gambling action isn't in the casinos of Atlantic City or Las Vegas, but rather on television game shows, then Card Sharks is for you. Based on the game show of the same name, it lets you compete against another player or a computer opponent in a contest that challenges your knowledge of public opinion as well as your luck.

You start by guessing how many people out of a surveyed group responded in a certain way to a particular question. For instance, you might be asked, "Out of 100 eighteen-year-old girls, how many said they'll be upset if they're not married by the time they're 30?" After you answer, your opponent guesses whether the correct number is higher or lower than your conjecture. The player who is right can try to win a game by guessing whether the next card dealt from a standard deck of playing cards will be higher or lower than the one before.

Win the match, and you can play Money Cards, where you can turn an initial $200 bet into $32,000. Not bad for a 30-minute show! ■

Bob Guerra, editor for a Boston hospital, keeps a seemingly endless stream of software reviews coming RUN's *way.*

Table 1. List of Manufacturers.

Vegas Gambler, Vegas Craps
$29.95
California Dreams
780 Montague Expressway,
Suite 403
San Jose, CA 95131

Trump Castle: The Ultimate Casino Gambling Simulation
$34.95
IntraCorp, Inc.
14160 SW 139th Court
Miami, FL 33186

Blackjack Academy
$39.95
MicroIllusions; distributed by
Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025

Aussie Joker Poker
$29.95
Joker Software International;
distributed by Mindscape
3444 Dundee Rd.
Northbrook, IL 60062

Card Sharks
$12.99
Sharedata
7400 W. Detroit St., Suite 170
Chandler, AZ 85226

COMMODORE CLINIC

Commodore's senior systems engineer solves the problem users of early 1581 disk drives have been experiencing.

By LOU WALLACE

Q Have you heard about any problems with the 1581 reading or writing sequential files? My drive had these problems, and when I called Commodore, I was told I would have to purchase an upgrade chip. It cost me $25, and I was able to install it myself, but others less technically inclined will have to pay a service center to do it. Why didn't they replace it free of cost?

—CARL JOHNSON
PITTSBURGH, PA

A I contacted Commodore about the 1581, because, as the above letter and others we've received indicate, there are people who are concerned about the 1581 and any problems early models might have had. Commodore's senior systems engineer, Fred Bowen, gave me this response:

"Some people who have used the Commodore 1581 disk drive have reported problems such as 'trashed' disks (data errors in a file or the system track) or varying frequencies of Drive Not Ready or Drive Not Present situations.

"While these problems have prompted some folks to avoid the 1581 drive, it must be noted that *most* problems attributed to the 1581 are in fact user-related. For example, the disk must *never* be removed while the drive's activity light is lit, before the track cache has been completely dumped by the DOS to the physical disk. Another very common cause of problems, including Drive Not Ready errors and even perceived modem problems, is the presence of a device on the serial bus that is not turned on. It is important that all peripherals connected to the system be turned on or else be disconnected from the system.

"Lastly, the use of quality, double-sided, double-density (DS/DD) disks designed for 1-megabyte data density is necessary. On the other hand, using disks designed for ultra-high densities can lead to trouble when used on the 1581 and therefore should be avoided.

"Commodore has experienced a problem with the WD1770 controller chip (socket U4), which can result in trashed disks and splat files, usually during periods of heavy disk use, such as with disk backups or multiple file copies. The presence of a WD1770 controller, however, does not mean you can expect a problem. In light of these difficulties, Commodore has notified its service centers to replace the WD1770 with a WD1772 controller chip. This replacement will be made under warranty even if the unit has been purchased more than 90 days prior to bringing the unit in for service. There is a short program I wrote, available on most online services, that can tell you what controller chip is in your 1581. If you think you have experienced a problem like those described, you should take your drive to a local service center for evaluation. The attempted repair or modification of a system by unqualified persons is not recommended and will void the warranty and free replacement of the WD1770.

"While reports would appear to indicate the problems are widespread, in fact the numbers are quite small. Authorized service centers should be aware of any problems, as the 1581 drive has been well covered by past issues of the service bulletin, *TechTopics*. Inquiries should be directed to your local service center.

"If you are interested in checking your 1581 to see what type of controller it has, here is the program you can use to determine the controller in use."

```
100 REM CHECK 1581 DISK FOR CON
    TROLLER TYPE & J1 JUMPER
105 REM ASSUMES 60HZ CLOCK,
    FUNCTIONAL TOD HARDWARE
    AND GOOD DISK
106 REM FOR C64 OR C128 (FOR C128,
    DO BANK15 FIRST)
110 REM 12/09/87 FRED BOWEN
120 PRINT"INSERT ANY *FORMAT
    TED* DISK IN DRIVE."
121 INPUT"CHECK WHICH UNIT
    {FIVE SPACES}8{3 CURSOR
    LEFTS}";U: PRINT
130 OPEN 1,U,15:L=218:H=1:REM AD
    DRESS $1DA IN DOS MEMORY
140 OPEN 2,U,2,"#"
145 PRINT#1,"M-R"CHR$(0)CHR$(192)
    CHR$(1):GET#1,A$
150 IF ASC(A$+CHR$(0))< >192 THEN
    PRINT"DEVICE"U"IS NOT A
    1581.": GOTO360
160 PRINT#1,"M-R"CHR$(L)CHR$(H)
    CHR$(5): REM MODIFY CONTROL
    LER CMDS
170 FORI=1TO5:GET#1,A$:B$=B$
    +CHR$(ASC(A$+CHR$(0))OR3):
    C$=C$+A$:NEXT
180 PRINT#1,"M-W"CHR$(L)CHR$(H)
    CHR$(5)B$
200 PRINT#1,"U1";2;0;1;0:GOSUB500:
    REM SEEK TRACK 1 & RESET
    TIMER
210 PRINT#1,"U1";2;0;80;0:
    GOSUB600:REM SEEK TRACK 80 &
    READ TIMER
230 PRINT#1,"M-W"CHR$(8)CHR$(64)
    CHR$(1)CHR$(0):REM TEST
    JUMPER J1
240 PRINT#1,"M-R"CHR$(8)CHR$(64)
    CHR$(1):GET#1,J$
260 PRINT#1,"M-W"CHR$(L)CHR$(H)
    CHR$(5)C$:REM RESTORE CON
    TROLLER CMDS
270 IF VAL(F$)>0 THEN PRINT" SEEK
    ERROR-CHECK DISK."
    :PRINT:RUN
290 PRINT"UNIT"U" CONTAINS A "
    ;:REM REPORT
300 IF T>20 THEN
    PRINT"WD1770";:E=1
310 IF T<20 THEN PRINT"WD1772";
320 PRINT" AND J1 IS ";
330 IF J$="" THEN PRINT
    "OPEN":E=E+2
340 IF J$>"" THEN PRINT"CLOSED"
345 IF E=0 THEN PRINT"THIS UNIT
    IS OKAY."
350 IF EAND1 THEN PRINT"THE
    CONTROLLER SHOULD BE RE
    PLACED WITH A WD1772."
355 IF EAND2 THEN PRINT"THE
    JUMPER J1 CAN BE CLOSED FOR
    FASTER STEP RATE."
370 CLOSE2: CLOSE1: END
500 FORI=11TO8STEP-1
    :POKE56320+I,0:NEXT:
    RETURN:REM RESET TOD
600 INPUT#1,F$,R$,E$,D$:T=
    PEEK(56329)*10+PEEK(56328):
    RETURN:REM WAIT,READ TOD ■
```

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RUN's Checksum

TYPE IN *RUN*'s CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN*'s Checksum. The screen will display a SYS number that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

With this new version, when you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line is correct. If the number that appears *doesn't* match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program.

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACEs}—press the space bar 22 times
{SHIFT CLR}—hold down the shift key and press the clr-home key
{2 CRSR DNs}—press the cursor-down key twice
{CTRL 1}—hold down the control key and press the 1 key
{COMD T}—hold down the Commodore logo key and press the T key
{FUNCT 1}—press the F1 key
{5 LB.s}—press the British pound key (*not* #) five times R

Listing 1. *RUN*'s Checksum program. This program is available on *RUN*'s BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=4
   9152
30 FOR I=0TO169:READB:CK=CK+B:POKE SA+I,B:NEXT
40 IFCK<>20651 THENPRINT"DATA ERROR!":END
50 POKESA+11,24:POKESA+111,38:POKESA+140,234
60 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
70 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128
   THEN 100
80 POKESA+13,124:POKESA+15,165:POKESA+25,124:PO
   KESA+26,165
90 POKESA+39,20:POKESA+41,21:POKESA+123,205:POK
   ESA+124,189
100 POKESA+4,INT(SA/256):SYS SA:NEW
110 DATA 120,162,24,160,13,173,4,3,201,24,208,4
    ,162,13,160,67,142,4,3,140
120 DATA 5,3,88,96,32,13,67,152,72,169,0,141,0,
    255,133,176,133,180,166,22
130 DATA 164,23,134,167,132,168,170,189,0,2,240
    ,58,201,48,144,7,201,58,176
140 DATA 3,232,208,240,189,0,2,240,42,201,32,20
    8,4,164,180,240,31,201,34
150 DATA 208,6,165,180,73,1,133,180,230,176,164
    ,176,165,167,24,125,0,2,133
160 DATA 167,165,168,105,0,133,168,136,208,239,
    232,208,209,169,42,32,210
170 DATA 255,165,167,69,168,170,169,0,32,50,142
    ,169,32,32,210,255,32,210
180 DATA 255,169,13,32,210,255,104,168,96,104,1
    70,24,32,240,255,104,168
190 DATA 96,56,32,240,255,138,72,152,72,24,162,
    0,160,0,32,240,255,169
200 DATA 42,208,198
```

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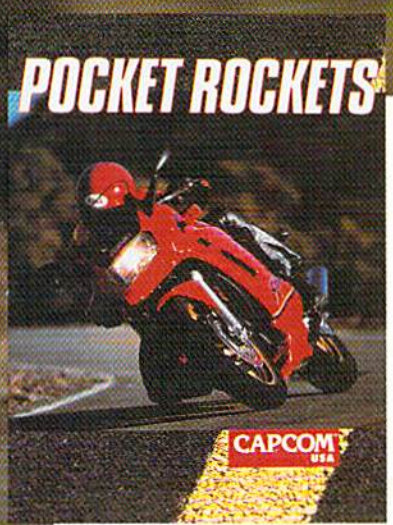

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